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## Table of Contents

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ORIGINAL ARTICLES—	PAGE.	SPECIAL ARTICLES ON TREATMENT—	PAGE.
"Nasal Sinusitis in Relation to General Infection", by CLIVE M. EADIE, M.B., B.S. . . . .	637	The Treatment of Dysmenorrhœa . . . . .	660
"Calcium Therapy in the Treatment of the Allergies and Its Use in the Form of 'Afenil', by IVAN MAXWELL, M.D., and DAVID ZACHARIN, M.B., B.S. . . . .	642	BRITISH MEDICAL ASSOCIATION NEWS— Scientific . . . . .	662
"A New Intradermal Reaction in Ankylostomiasis", by A. B. VATTUONE, M.D. . . . .	645	UNIVERSITY INTELLIGENCE— The University of Sydney . . . . .	666
"Anthrax in East Africa", by R. MURRAY BUNTINE, M.B., B.S., D.T.M. & H. . . . .	647	CORRESPONDENCE— Portraits in the Public Press . . . . .	666
"The Combined Radiation Treatment in Pelvic Cancer", by H. M. MORAN, M.B., F.R.C.S., F.R.A.C.S. . . . .	647	Coal Miner's Lung . . . . .	666
REPORTS OF CASES— "Three Cases of Cerebellar Tumour", by LEONARD C. E. LINDON, M.S., F.R.C.S. . . . .	652	OBITUARY— Arthur William Daly . . . . .	667
REVIEWS— Defect in Speech . . . . .	654	Thomas Glen Oliphant . . . . .	667
LEADING ARTICLES— Medical Research in England and Australia . . . . .	655	CONGRESS NOTES— Australasian Medical Congress (British Medical Association) . . . . .	667
CURRENT COMMENT— Nephritis . . . . .	657	DIARY FOR THE MONTH . . . . .	668
ABSTRACTS FROM CURRENT MEDICAL LITERATURE— Ophthalmology . . . . .	658	MEDICAL APPOINTMENTS . . . . .	668
Oto-Rhino-Laryngology . . . . .	659	MEDICAL APPOINTMENTS VACANT, ETC. . . . .	668
		MEDICAL APPOINTMENTS: IMPORTANT NOTICE . . . . .	668
		EDITORIAL NOTICES . . . . .	668

### NASAL SINUSITIS IN RELATION TO GENERAL INFECTION.<sup>1</sup>

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I WISH to express my keen appreciation of the honour conferred on me by the invitation of the Science Committee to read this paper.

For some years I have been particularly interested in investigating the association of nasal sinusitis with general infections, and I thought it might be of some interest to members if I spoke regarding these results. I should like to explain at the start that the basis of this paper is, first, the findings in some 120 *post mortem* examinations; secondly, from the results of suction exploration of the nasal sinuses in the living; of these I have over 100

records. The third line of investigation was that of relating the findings of the sinuses, as found at the time of operation, with any general infection present.

The number of my cases is not very large, and one can only regard the possible deductions as being suggestive. Many men have written at more or less length regarding the association of the two conditions, both general physicians and specialists.

#### ANATOMY.

I thought it might be helpful at the start to go over some points in the general anatomy of the nasal sinuses by showing a few pictures.<sup>1</sup>

The membrane lining the interior of the nasal sinuses is continuous with that lining the nasal passages. It is normally thin and glistening white in colour; it is red only in states of inflammation. It may be described as being composed of three

<sup>1</sup>Read at a meeting of the Victorian Branch of the British Medical Association on March 1, 1933.

<sup>1</sup>At this stage anatomical plates were shown by Dr. Eadie.

layers (Hajek): a superficial layer of delicate fibrous tissue covered by stratified ciliated epithelium; a middle layer or glandular layer in which the glands (acinous) are scattered about; a deep layer free of glands and composed of more compact fibrous tissue which takes the place of the periosteum.



FIGURE I.

Blood vessels and lymph channels are found in these layers, and these drain either by perforating channels through the bony walls or *via* principal vessels through the ostium of the particular sinus.

#### PHYSIOLOGY.

As regards the general physiology, we do not know definitely the real function of the nasal sinuses.

Amongst the possibilities that have been offered we may note the following: (i) That they increase the resonance of the voice. (ii) That they are in some way associated with the sense of smell, though no true olfactory membrane is found in any of the sinuses. (iii) That they supply warmth and moisture to the inspired air.

For practical purposes it is important to visualize the normal currents of inspired and expired air in regard to the orifices of the different nasal sinuses. For this purpose we may follow diagrams of the sinuses. We note that during the act of inspiration the air is directed up towards the anterior end of the middle turbinate bone. Here the current divides. The upper stream sweeps through the superior meatus on to the sphenoidal recess

down across the anterior wall of the sphenoidal sinuses to the posterior wall of the naso-pharynx. The lower stream of inspired air goes along the middle meatus. So we note that the inspired air passes across the orifices of the various nasal sinuses, and, by the action of suction, tends to bring any secretion present in the sinuses back to the naso-pharynx. The ciliated epithelium also helps in this respect.

The current of expired air principally travels along the inferior meatuses. Thus to clear the nose of secretion situated in the middle and superior meatuses and sphenoidal recesses, we have to sniff up air. But to clear secretions on the floor of the nose and in the region of the inferior meatuses we should blow the air out.

Blowing the nose hard increases the pressure in the middle meatus and the region of the nose above this, and so accordingly increases the pressure inside the nasal sinuses. "Sniffing", of course, has the reverse effect in the sinuses, that is, a negative pressure is produced. The maintenance of these airways free of all obstruction is essential for the normal functioning of the nasal sinuses.

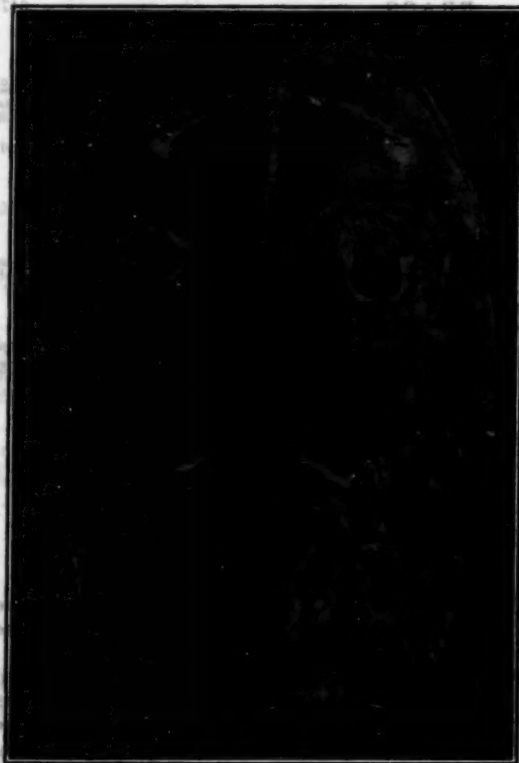


FIGURE II.

#### GENERAL PATHOLOGY.

It would seem appropriate to say a few words regarding the general pathology of the nasal sinuses before going on to discuss the main topic of the paper.

In the first place it appears that those noses in which the internal conformation of the nasal meatuses are defective, are very much more likely to develop nasal sinusitis. This is because in those cases the normal passage of the intranasal air currents are interfered with. It is thus that deviated nasal septums and spurs, also hypertrophied adenoids, predispose the patient to acute and chronic nasal sinusitis. With the onset of an ordinary coryza or an influenzal attack, the whole of the nasal mucous membrane, including that lining the nasal sinuses, is inflamed. With the clearing up of the cold the pathological conditions in the normally ventilated and drained nasal sinuses clear up also. But those in which normal ventilation does not occur tend to become chronically inflamed and infected. They become local cavities of infection. The infective organisms periodically flare up, causing acute exacerbations.

These exacerbations occur when either the virulence of the organisms becomes increased or when the resistance, local or general, of the patient becomes lowered. These two states may occur together.

During the more quiet stage there is a continual absorption of toxins and organisms, giving rise to the so-called latent focus of infection. The organisms go directly into the lymph or blood channels and give rise to secondary infection elsewhere in the body.

It has been shown that organisms are not necessarily present in these secondary foci, but that they need continual supplies of sepsis from the original focus for their maintenance.

In regard to the local spread of infection, Pickworth has shown in his specimens of sphenoidal infection the actual presence of the organisms in the tissue of the sinus mucosa, in the pituitary gland, and so through the dura to the cerebral tissue.

The pathological changes in the actual sinus mucosa I do not propose to discuss in this paper, though one or two plates showing the appearance of polypi may be interesting.

Figure I shows a sagittal section of a skull with polypi in both maxillary antra. You are looking at the posterior surface of the section and towards the anterior part of the maxillary antra. Figure II is another sagittal section looking at the anterior surface. It shows the polypoidal mucosa of the maxillary antra again, but looking towards the posterior walls of these cavities. These show old-standing chronic inflammatory changes. The anterior ethmoidal cells also showed hyperplastic changes, but the posterior sinuses were apparently unaffected.<sup>1</sup>

#### POST MORTEM EVIDENCE.

Now we shall consider the *post mortem* evidence of the relation of nasal sinusitis to the general infection. The number of cases examined was 104;

<sup>1</sup> Five other plates showing polypi in connexion with the frontal sinuses, anterior and posterior ethmoids, maxillary antra and sphenoidal sinuses were shown.

of these 77 had definite signs of nasal sinusitis. We may group them under several headings.

#### Respiratory Infection.

The cases examined *post mortem* in which respiratory lesions and associated nasal sinus conditions were found are shown in Table I.

TABLE I.  
Post Mortem Cases showing Respiratory Lesions and Associated Nasal Sinusitis Conditions.

Respiratory Lesion.	Number of Cases.	Infected Nasal Sinuses.	No Apparent Sinusitis.	Anterior Nasal Sinusitis.	Posterior Sinusitis Alone.
Lobar pneumonia ..	11	11	0	10	1
Bronchopneumonia ..	22	16	6	10	2
Post-operative ..	7	6	1	6	0
Pulmonary abscess ..	2	2	0	2	0
Acute pulmonary oedema ..	1	0	1	0	0
Chronic bronchitis ..	3	2	1	2	0
Asthma ..	1	1	0	1	0
Chronic pulmonary tuberculosis ..	6	2	4	2	0
Bronchiectasis ..	0	0	0	0	0

If we examine Table I we first note lobar pneumonia.

#### Lobar Pneumonia.

In a previous paper, published in THE MEDICAL JOURNAL OF AUSTRALIA, February 20, 1932, I recorded the association of lobar pneumonia with nasal sinusitis. May I give these figures again?

There were eleven patients who had died of lobar pneumonia, amongst 103 on whom *post mortem* examinations were made, and of these eleven every one showed the presence of infection of one or more of the nasal sinuses.

#### Bronchopneumonia.

Looking at Table I, showing the respiratory infections, we next notice bronchopneumonia, 22 cases, and 16 of these showed infected nasal sinuses. There

TABLE II.  
Post-operative Bronchopneumonia.

Case.	Operation.	Nasal Sinusitis.
3	Appendicectomy.	Present.
59	Appendicectomy.	Present.
35	Carcinoma of pyriform fossa.	Present.
60	External frontal sinus operation.	Present.
69	Insertion of radium into lip.	Present.
77	Resection of bowel.	Present.
90	Prostatectomy.	No nasal sinusitis.

were seven such cases and we notice that the nasal sinuses were infected in six; one only, case 90, in which a prostatectomy had been done and bronchopneumonia developed, had apparently normal nasal sinuses.

In the cases showing bronchopneumonia, both post-operative and otherwise, it would have been interesting to know whether any other oral or pharyngeal sepsis was present. For one realizes the extreme importance of recognizing and treating efficiently any such cause of inhalation sepsis, particularly in debilitated patients.

Here one may mention the advisability of using the intratracheal form of anaesthesia, both in operation on the ear, nose and throat, and also in other operations when there are signs of nasal or oral sepsis. Some figures collected by Dr. F. W. Green, senior anaesthetist to the Melbourne Hospital, in reference to this form of anaesthesia will, I am sure, be of great interest, and I hope that he will tell us something about them this evening.

#### *Pulmonary Abscess.*

There were two cases of pulmonary abscess, and each showed the presence of nasal sinusitis.

CASE XXXIII.—The patient was a male, aged forty-five years. He had gonorrhoea, acute urethritis, prostatitis, pyelonephritis and pulmonary abscess.

Chronic catarrhal sinusitis was present in the right antrum. A solid jelly swelling of the membrane on the floor and lateral wall was present; it was half an inch thick. No pus or mucopus was present.

CASE LXXXIX.—The patient was a female, aged twenty-four years. She had suppurative appendicitis and pyemic abscesses in the liver and lung. Appendicectomy had been performed.

Acute suppurative sinusitis was present. In the right antrum the membrane showed oedematous thickening, with a low sessile polypus. Thin yellow pus was present in the left antrum, the membrane being pale and thickened.

One feels that these two cases point to a blood stream infection of the lungs rather than to any inhalation sepsis as being the cause of the pulmonary abscess.

#### *Acute Pulmonary Oedema.*

There was one case of acute pulmonary oedema in which the nasal sinuses appeared normal.

#### *Chronic Bronchitis.*

There were three cases of chronic bronchitis and two (Cases XXXVI and XLVII) showed gross infection of the maxillary antra.

#### *Chronic Pulmonary Tuberculosis.*

In regard to chronic pulmonary tuberculosis we find that there were six cases in all. Four of these showed normal non-infected nasal sinuses. Two showed signs of some infection.

One (Case LXIV) showed some slight catarrhal thickening of the mucous membrane of the maxillary antra, no gross hypertrophy or polyposis being present. No pus, mucopus or debris was found in the cavities. The appearance was just that of a mild catarrhal infection.

In the second (Case CI), the picture of the sinus was that of a terminal infection of the right anterior and posterior groups of the nasal sinuses. The appearance was quite different from what one finds in an old-standing chronic infection.

Accordingly, one feels that it is not usual to find nasal sinusitis in association with chronic pulmonary tuberculosis. It is generally recognized that it is rare to find tuberculous infection of the mucosa of the nasal sinuses.

#### *Nasal Sinusitis in Relation to Gastro-Intestinal Affections.*

In considering nasal sinusitis in relation to gastro-intestinal affections, we need to consider the effect of organisms (pus and mucopus) ingested, and of organisms reaching the tissues *via* the lymph and blood streams.

One would expect the acid contents of the stomach to destroy most of the organisms ingested, but the persistence of ingestion of septic material would be very likely to set up a catarrhal condition of the gastric mucosa as time went on. This, together with the action of organisms coming by the blood stream, would be prone to set up local spots of inflammation in the gastric mucosa, with the possible development of ulceration.

Specially illustrating this point is the case described by Pickworth, in which there were marked infection of the sphenoidal sinus and hæmorrhagic areas in the gastric mucosa, cocci of a similar nature being demonstrated in each lesion.

#### *Chronic Gastric Ulcer.*

If we examine the four cases of chronic gastric ulcer found in the *post mortem* series, we find that in two there was sinus infection; in one of them also there was marked dental sepsis; in the other two cases there was no infection of the nasal sinuses. The presence or not of any oral sepsis was not noted.

CASE XCIII.—The patient was a male, aged sixty-seven years. In the left sphenoid there was thickened white membrane. The sinus was filled with pus. The right antrum contained a large thin-walled polypus, occupying half the cavity, springing from the floor and lower naso-antral wall. No pus was found in the cavity.

CASE LXVII.—The patient was a female, aged fifty-eight years. Infection at the bases of the maxillary antra was present. It was alveolar in origin and due to septic teeth. The rest of the sinuses appeared normal.

CASE LXXXVI.—The patient was a female, aged forty-one years. All the sinuses were normal. The condition of the teeth was not noted.

CASE LXXXV.—The patient was a male, aged forty-one years. All the sinuses were clear. The condition of the teeth was not noted.

#### *Appendicitis and Cholecystitis.*

The association of nasal sinusitis with appendicitis and cholecystitis has been pointed out by many authors, including W. Hunter, Watson Williams, and Pickworth.

In this series of *post mortem* examinations only one case of appendicitis was the cause of death, and this patient had acute suppuration of the right maxillary antrum and right sphenoidal sinus (Case III). Cholecystitis and cholelithiasis were present in nine cases (XLV, LII, LXV, LXXII, LXXVIII, X, XVIII, LXVIII, XXXI), and in every instance there were signs of chronic nasal sinusitis. In four cases the posterior group were principally affected, in four the anterior group, and both groups in one case.

#### *Intracranial Affections in Association with Nasal Sinusitis.*

The close anatomical association of the nasal sinuses with the cranial structures I have already pointed out. Pickworth has shown in microscopical sections the acute spread of organisms from the sphenoidal sinuses and mucosa into the cerebral tissues. This has been shown to occur in old-standing chronic inflammatory lesions, as well as in acute cases.

In this series there were six cases showing *post mortem* cerebral lesions, and in every case there were signs of nasal sinusitis (Table III). Looking at this table, we note several conditions.

TABLE III.  
Intracranial Lesions in Association with Nasal Sinusitis.

Lesion.	Number of Cases.	No Infected Sinuses.	Normal Sinuses.	Anterior Sinuses Alone Infected.	Anterior and Posterior Sinuses Alone Infected.	Posterior Sinuses Alone Infected.
Meningitis	3	3	—	—	2	1
Encephalitis lethargica	1	1	—	1	—	—
Cerebral abscess	1	1	—	1	—	—
Cerebral thrombosis	1	1	—	—	—	1

#### Meningitis.

There were three cases of meningitis.

CASE XIII.—The patient was a male, aged forty-two years. He died of a diffuse purulent meningitis, thought to be due to pneumococcal infection. It may be of interest to read the actual finding of the condition of the nasal tissues in this case.

The left sphenoids were acutely inflamed. A submucous hæmorrhage the size of a split pea was present on the roof underlying the basi-sphenoid. Submucous pus (yellow) was also present. Thin pus was present in the sinus. It was a large sinus extending across to the right. There were no pterygoid extensions. On the right side the sinus was small. Similar acute suppurative inflammation was present. The basi-sphenoid forming the posterior and part of the superior wall of the sinus was intensely congested and crumbly in appearance, like coarse sandstone.

The posterior ethmoid cells, both right and left, had yellow pus in them, and the mucosa was oedematous and jelly-like, with patchy congested areas. A large amount of pus was present. The anterior ethmoid cells were the site of acute suppurative infection (similar).

The right frontal sinus was the site of acute suppurative. The mucosa was jelly-like and oedematous. Yellow pus was present in the sinus.

The right maxillary antrum had a mucosa which was oedematous and jelly-like, with a small acute polypus on the naso-antral wall. This was of a thin-walled, white grape type, with congested vessels over it. Much yellow pus was present in the cavity. The left maxillary antrum appeared to be affected by post-operative sclerosis. In any case, the bone was very sclerosed and thickened. No actual cavity was found.

CASE XLII.—The patient was a female, aged fifty-four years. There was a general acute suppurative pansinusitis. The *post mortem* diagnosis was meningitis.

In the third case, that of a male, aged sixty-eight years, the *post mortem* diagnosis was basal meningitis. This case is very interesting in that it showed the focus to be in one rather abnormally placed posterior ethmoidal cell. The remaining sinuses did not show the presence of any purulent collection.

#### Encephalitis Lethargica.

There was one case of *encephalitis lethargica*.

In this instance there was definite acute suppurative in the ethmoid cells. The frontal sinuses and maxillary antra manifested a more chronic condition, with super-added acute exacerbations. The sphenoids only had rather congested mucosa, no pus being found in the cavities. The appearance was certainly suggestive of the extension of the intracranial lesion from the nasal sinusitis.

#### Cerebral Abscess.

The case of cerebral abscess was a direct extension from a suppurating frontal sinus to an abscess in the frontal lobe.

#### Cerebral Thrombosis.

There was one case of cerebral thrombosis.

This occurred in a woman, aged sixty, who died with atherosclerosis, cerebral thrombosis and softening. There was a quite definite old-standing double chronic sphenoiditis. The surrounding bone was chronically inflamed, also the membrane lining the cavities. Thin pus was found in each.

#### Intracranial Associations.

Under intracranial associations one would include such manifestations as defective memory, changes in the mental state, psychosis, neurasthenia, and on into the final stages of insanity.

Graves and Pickworth have done a great deal of work on this subject at the Rubery Hill Mental Hospital in Birmingham. When in England I took the opportunity of staying in Birmingham and visited Graves and Pickworth. They were both extremely courteous and took pleasure in showing me their work. Dr. Graves took me round the wards of the hospital, where I saw patients in various stages of mental derangement. His work in eliminating all sources of focal infection in these patients certainly produced amazing results. At the hospital, for as such one must regard it, as distinguished from the old fashioned lunatic asylum, there is a surgical block where ear, nose and throat operations and examinations are done. There is a dental surgery, a gynæcological room, a room for bowel irrigation, and so forth. There are three qualified resident medical officers and a trained nursing staff.

The patients that I saw certainly impressed me very much as to the great improvement in their mental state.

Since resuming practice I have had seven patients referred to me by physicians on account of their mental state. All of these were greatly improved by treatment of their ear, nose and throat condition. They were all suffering from chronic nasal sinusitis.

Pickworth has charge of the pathological department, and I was most interested in studying his specimens of grossly infected nasal sinuses, particularly sphenoidal sinuses, removed from deceased mental patients. Also his microscopic slides showed the extension of pyogenic organisms through from the sphenoidal sinuses into the meninges and cerebral tissue.

#### Regional Complications of Nasal Sinusitis.

Under regional complications of nasal sinusitis we may mention disturbances of the function of the pituitary gland, with the probability of the whole endocrine balance being upset.

Disturbance of vision due to involvement of the optic nerve from infection spreading from the sphenoidal sinuses or from the posterior ethmoidal cells is well recognized.

#### Artirific Affections Associated with Nasal Sinusitis.

One notes that rheumatic conditions and rheumatoid arthritis are often associated with a chronic nasal sinusitis, the nasal sinusitis being the focus of infection. We have seen cases in which the elimination of sepsis from a suppurating maxillary

antrum has relieved the arthritis. In the later stages, with marked deformity, such relief can hardly be expected; permanent secondary changes have occurred.

#### Circulatory System.

In the *post mortem* series there were twenty-one cases with marked arteriosclerosis, and of these seventeen showed signs of nasal sinusitis. One would suggest the entrance of bacteria and their toxins into the blood stream as being a likely direct cause. Then endocarditis and cardiac toxæmia are also found at times associated with a nasal sinusitis.

#### Associated Skin Affections.

Under the heading of associated skin affections one mentions acne, erythema; and those conditions have cleared up on radical operative treatment of infected nasal sinuses.

Eczema and urticaria seem to be more associated with the allergic condition. The same state is demonstrated in the sinuses in cases of hay fever, certain cases of asthma, and vasomotor rhinitis.

A patient suffering from allergy may have nasal sinuses which show pathological changes. These changes in the mucosa are different in appearance from those in which pyogenic organisms have been at work, or in which such pyogenic infection is superimposed on the pure allergic condition. Of course, operative interference on nasal sinuses affected as a result of pure allergy is quite useless, to say the least.

#### Nasal Sinusitis in Relation to Influenza.

It seems that in the early stage of influenza there is generally a rhinitis, and associated with this there is an inflammation of the mucous membranes lining the nasal sinuses. In some cases the sinusitis is mild, but in others it goes on to suppuration, and if the drainage of the pus from a sinus becomes blocked and empyema occurs, much pain and headache arise. Once a suppurating sinus is present there is a possibility of a bronchitis or bronchopneumonia developing with any lowered resistance of the patient. Should the sphenoidal sinus be grossly infected by a very virulent strain, meningitis can quite easily supervene.

#### Suction Exploration of the Nasal Sinuses.

Now we may consider any evidence shown by the method of suction exploration of the nasal sinuses.

By this method the maxillary antra, the posterior ethmoidal cells, and the sphenoidal sinuses can be examined;

A cannula is introduced into each and sterile water is sucked in and out of a ten cubic centimetre syringe. The contents are put in a sterile test tube and sent to the pathological department to be microscopically examined by film and culture. In practice one finds that very often, though actual pus is withdrawn from the sinus, no organisms are found by the pathologist. Then again, in many cases in which a negative report is obtained, numerous

organisms have been found on sending the lining membrane itself for culture.

So one comes to the conclusion that a "negative" suction exploration report does not necessarily mean that the sinus is not infected.

One finds in practice this method of diagnosis and treatment of nasal sinusitis of the greatest value. The results of some 150 such examinations tend to substantiate the findings regarding the association of nasal sinusitis with general diseases, as shown in the *post mortem* examinations.

#### Evidence Afforded by Operation.

I have spoken at some length now, and must apologize for taking up so much of your time; therefore, as regards the evidence shown by actual operation on the sinuses, I shall only say that one is constantly finding the association of infected sinuses with a general infection. It would be interesting if some of the ear, nose and throat specialists present would also speak regarding their findings. Of particular value would be the observations of the general physicians, who are, of course, in the best position to comment on the possible relationship of a nasal sinusitis with a particular general infection.

In conclusion, I wish to thank Mr. Marriott for his help in showing the pictures for me, and also to thank you for the kindness and patience with which you have listened to my paper.

#### CALCIUM THERAPY IN THE TREATMENT OF THE ALLERGIES AND ITS USE IN THE FORM OF "AFENIL".

By IVAN MAXWELL, M.D. (Melbourne),  
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AND

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Honorary Clinical Assistant to Out-Patients,  
Melbourne Hospital.

AMONGST the multitude of substances employed in the treatment of the allergic manifestations, calcium has long had a place. Pottenger,<sup>(1)</sup> in 1924, considered that sufferers from asthma, urticaria, hay fever *et cetera* belonged to a particular group of individuals who possessed a vegetative nervous system in which parasympathetic activity prevailed; the anaphylactic (now called allergic) reaction expressed itself as a parasympathetic syndrome.

Atropine, which inhibits the vagus directly, and adrenaline, which produces a similar effect by stimulating the sympathetics, he states, exert their influence on the asthma paroxysm for this reason.

According to this observer, the result of stimulation of the nerves of any system must depend largely upon the condition of the cells upon which these nerves act. He further postulates that an increased parasympathetic action presupposes a relative

increase in potassium, as compared with calcium ions in the cells; either an actual decrease in the calcium or an actual increase in the potassium.

Reasoning from this view, calcium chloride was given intravenously in asthma. Pottenger<sup>(1)</sup> reported complete relief of paroxysms in his cases. Since then, many reports have been published of the use of calcium in this way, but few have taken such a favourable view of its action.

Thomas<sup>(2)</sup> states that sufficient calcium is present in the average dietary to supply bodily needs, but that certain persons who lack this element in their tissues are apparently unable to absorb or metabolize it satisfactorily.

The calcium content of the blood does not necessarily afford an accurate index to the amount of this substance in the tissue cells of the body. Bellingheimer, Franke and others note a reduction of blood calcium in the asthmatic. It is in the tissue cells that the phenomena of allergy probably occur, and it is here, if anywhere, that the supply should be supplemented.

It would not be easy to demonstrate whether calcium in the blood stream was on its way to the tissue cells or was being carried away from them to be eliminated.

Thomas<sup>(2)</sup> concludes "we have failed to help asthmatics by intravenous calcium salts".

Douthwaite's<sup>(3)</sup> opinion is that "in view of the fact that calcium ions depress vagus conductivity, it will be appreciated that a reduction in their concentration will lend itself to the occurrence of asthma". He considers, therefore, that it is advisable to administer calcium, and recognizes that small amounts are of no use.

Hallam<sup>(4)</sup> states that calcium is "singularly disappointing in the treatment of urticaria".

Ramirez,<sup>(5)</sup> in a study of 150 allergic cases in which the blood calcium was less than 10 milligrammes per hundred cubic centimetres of blood, and in which calcium was administered in various forms, records that such administration "did not influence the symptoms or course of the disease in a single case, even though the blood calcium was actually increased". He also found incidentally that a great many patients with hay fever and urticaria showed normal or higher than normal calcium values. Calcium was used in the form of "Vigantol", calcium lactate, and "Afenil". He did find temporary improvement in some cases, more especially in urticaria, but he questions whether this was attributable to the calcium administered or to other factors.

Cohen and Rudolph,<sup>(6)</sup> in estimations of total blood calcium and of the so-called ionic or diffusible calcium, found factors of error in the available methods of estimation, sufficient to account for errors up to 25% in the results of attempts to estimate the calcium deficiency. They also made a study of ten patients who had been treated by many other methods for one year with no modification of their symptoms. They found the results of calcium administration "very disappointing".

Criep<sup>(7)</sup> mentions, in a recent article, that calcium therapy does benefit a certain proportion of urticaria patients and that this benefit, in the light of present knowledge, results, not by reason of supplying an existing calcium deficiency, but by the influence of calcium on the nervous system.

Tainter and Van Deventer,<sup>(8)</sup> working on experimentally produced oedemas, could demonstrate no protective action of calcium and parathyroid extract in such conditions, except when circulatory depression resulted from its administration. This led them to doubt the alleged theoretical effect of calcium on lessening cell permeability.

Other recent reports are that strontium salts, administered intravenously, have produced the same results as calcium, and the suspicion that sodium iodide, given intravenously, also operates in the same manner led Walzer<sup>(9)</sup> to the conclusion that all these types of treatment are probably based upon the same mechanism. He also considers that the value of calcium in asthma therapy has been considerably over-estimated.

Many workers, reporting favourable results from very small doses of calcium, have been using thyroid or parathyroid extract, quartz lamp treatment and other forms of therapy in combination with it. The part which calcium plays in the improvement of these cases is questionable. Any improvement noticed by Walzer from intravenous administration of calcium was always short-lived.

Thommen<sup>(10)</sup> used "Afenil" in 32 cases of hay fever and found that in none of them was any definite benefit derived.

#### The Authors' Results with "Afenil".

This short paper summarizes the influence of "Afenil" in a series of cases. Nearly all the patients had been previously treated by several other methods for long periods with little or no effect in ameliorating their symptoms.

Twenty patients were selected; ten were attending the Melbourne Hospital, and ten cases were drawn from private practice.

"Afenil" (Knoll) is a double compound, consisting of one molecule calcium chloride (31.6%) and four molecules carbamide (68.4%), and is supplied in ampoules containing 10 cubic centimetres (0.11 gramme of calcium) of a 10% solution.

The intravenous route is the only one available, and due precautions must be observed to prevent leakage subcutaneously, as the substance is an irritant and will cause pain and tissue necrosis. In order to prevent a sensation of heat, injections should be given as slowly as possible, with a fine needle, from three to five minutes being taken for an injection.

Contraindications are the presence of organic heart disorders, such as old valvular defects and myocarditis.

In this series of cases injections were given on alternate days to private patients, and biweekly

TABLE I.

Case Number.	Initials.	Age and Sex.	Diagnosis.	Cutaneous Reactions.	Ear, Nose and Throat Investigations.	Hydrochloric Acid in Gastric Contents.	Other Treatment. <sup>1</sup>	Result of other Treatment.	Number of "Afent" Injections.	Immediate Result. <sup>2</sup>	Delayed Result.
1	B.M.	29 F.	Angio-neurotic oedema. Asthma.	Hen feathers. House dust.	No abnormality.	Diminished.	S.D. Calc. lactate.	Nil.	2	Temporary relief.	No improvement.
2	A.P.	26 F.	Asthma.	Horse dander. House dust. Orris root.	Sinusitis. (Operation done.)	Normal.	S.D. Sputum vaccine. Intravenous peptone. S.D. Sputum vaccine. Intravenous peptone. Calc.	Nil. Nil.	10	Temporary relief.	No improvement.
3	M.S.	25 F.	Asthma.	Kapok. Orris root. Horse dander. House dust.	No abnormality.	Diminished.	S.D. Sputum vaccine. Intravenous peptone. Calc.	Nil. Nil.	10	Immediate relief.	Absence of symptoms for three months. Then recurrence, on which "Afent" had no effect.
4	M.L.	47 F.	Asthma.	Salmon.	Otitis media.	Diminished.	Intravenous peptone. S.D. Sputum vaccine. Urine-protose.	Nil. Nil.	10	Relief.	Marked improvement for three months. Improvement lasted three months.
5	M.E.	41 F.	Asthma.	Duck feathers. Kapok.	No abnormality.	Normal.	S.D. Sputum vaccine.	Nil. Nil.	8	Relief.	No improvement.
6	A.T.	32 F.	Asthma.	Rye grass.	Frontal sinusitis and tonsillitis. (Operation done.)	Normal.	S.D. Sputum vaccine.	Nil. Nil.	5	Relief.	No improvement.
7	E.C.	40 F.	Asthma.	Grass pollens.	No abnormality.	Normal.	S.D. Sputum vaccine.	Nil. Nil.	10	Relief.	Marked improvement (nine months). Absence of symptoms over six months.
8	H.G.	46 F.	Asthma.	House dust. Hen feathers. Cockfoot.	No abnormality.	Absent.	S.D. Sputum vaccine.	Nil. Nil.	11	Immediate relief.	Relief.
9	G.L.	17 F.	Asthma.	Rye grass.	Sinusitis and tonsillitis. (Operations done.)	Absent.	S.D. Sputum vaccine.	Nil. Nil.	5	No result.	Died subsequently. (An extremely acute case—only responded to intravenously administered adrenaline.) Slight improvement.
10	F.P.	33 F.	Angio-neurotic oedema. Asthma.	House dust.	No abnormality.	Normal.	S.D. Sputum vaccine.	Relief for two years.	5	Slight relief.	Apparent "cure" (one year).
11	C.H.	34 F.	Asthma.	Grass pollens. House dust.	No abnormality.	Diminished.	S.D. Sputum vaccine.	Nil. Nil.	15	Relief.	Very slight recurrence after twelve months controlled by three "Afent."
12	A.N.	35 M.	Hay fever.	Cockfoot. House dust.	Tonsillitis. (Operation done.)	Normal.	S.D. Sputum vaccine.	Temporary relief only.	15	Marked relief.	Apparent "cure" (one year).
13	J.H.	67 F.	Asthma.	House dust.	No abnormality.	Normal.	S.D. Sputum vaccine.	Nil. Nil.	15	Relief.	Died subsequently of coronary thrombosis.
14	J.L.	62 M.	Asthma.	House dust.	No abnormality.	Normal.	S.D. Sputum vaccine.	Nil. Nil.	10	Marked improvement.	Absence of symptoms. Dermatitis cleared.
15	J.S.	63 M.	Hay fever and dermatitis.	? Cockfoot.	No abnormality.	Normal.	—	—	10	Marked improvement.	Marked improvement.
16	C.W.	39 F.	Asthma.	No reaction.	No abnormality.	Normal.	Intravenous peptone.	Nil. Nil.	10	Relief.	Improved.
17	R.W.	36 F.	Asthma.	No reaction.	Sinusitis.	Absent.	—	—	7	Relief.	Unknown.
18	S.R.	27 M.	Asthma.	No reaction.	Sinusitis.	Not determined.	"Renop" vaccine.	Temporary improvement.	2	Some improvement.	No improvement.
19	K.M.	39 F.	Asthma.	No reaction.	Sinusitis. (Operation done.)	Not determined.	Intravenous peptone.	Temporary improvement.	10	No improvement.	No improvement.
20	McG.	52 F.	Asthma.	No reaction.	Sinusitis. (Operation done.)	Not determined.	"Renop" vaccine.	Temporary improvement.	4	No improvement.	Died subsequently.

<sup>1</sup> "S.D." refers to specific desensitization.<sup>2</sup> Under the heading "Immediate Result," the expression "Relief" denotes an amelioration of symptoms, as shown by decreased need for adrenaline injections at intervals, and not cessation of symptoms.

to hospital patients. The number of injections varied up to fifteen.

Details and results are given in the accompanying table. Two groups may be recognized, those who reacted to cutaneous tests with specific proteins (Cases I to XV), and those in whom such tests gave no reactions (Cases XVI to XX).

In all instances the usual type of treatment with iodides, adrenaline and ephedrine had been used, and was continued where necessary to control immediate urgent symptoms.

In two cases it was found that injection of "Afenil" during an acute attack of asthma induced nausea and vomiting. Apart from these, no untoward effects were noted. Except during the acute asthmatic phase, all patients were ambulant. As all patients in the series had failed to respond to other treatment, any improvement resulting could probably be attributed to the "Afenil".

Cases X to XV and XVII to XX represent the patients drawn from private practice. It will be noted that on the whole the results in these were much better than in the hospital cases. This, perhaps, is attributable to poorer living conditions existing amongst patients attending the public hospital, with little or no opportunity for rest.

#### Conclusions.

1. There was little, if any, difference in response to "Afenil" between the cases with specific sensitivity and those not manifesting such a reaction.

2. Forty per centum of patients maintained some improvement for a period of six months or longer; 15% for three months only.

3. It would appear that, in cases of allergic reaction which do not respond to other methods of treatment, "Afenil" is definitely worth a trial, but cannot be depended upon for results.

#### Acknowledgements.

We wish to thank Mr. J. P. Cusack, of Bulletin Place, Sydney, the Australian representative of Knoll and Company, who made available supplies of "Afenil" for the treatment of the public hospital patients.

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#### A NEW INTRADERMAL REACTION IN ANKYLOSTOMIASIS.

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SEVERAL patients, who were successfully treated for hookworm (*Ankylostoma duodenale*) disease, having come under notice, I adopted the suggestion of Professor Pende, Director of the Royal General Clinic at the University of Genoa, and after considerable study, evolved a new diagnostic procedure, which, by its saving of time and simplicity, will, I believe, be found very useful in practice. A new intradermal reaction is referred to. The chief difficulty in this study was the preparation of a specific antigen, and as it had not been available in the market and had not been produced in the laboratory, it was decided to manufacture one.

Some patients, affected with this disease and showing numerous eggs of the parasite upon microscopic examination of the faeces, were, after two days of a diet consisting of milk only, treated energetically with thymol. The faeces were then collected by a special process, when the ankylostomata, some males, but the majority females, were found. An antigen was prepared from these and collected into small sterilized glass tubes, in which they were sealed by flame from a Bunsen burner. Other sterilized phials containing physiological saline solution were collected and sealed in a similar way as controls.

The antigen and control were then tested on several patients, as well as on various carriers, discovered accidentally amongst the relatives of the patients.

A drop of the antigen was then injected into the derma on the medial aspect of the forearm of each patient. About six centimetres from this first puncture a second injection, that of the control, was made. From fifteen to thirty minutes after injection the antigen gradually formed a clear whitish blister, surrounded by a hyperemic circle about two centimetres in diameter, with an irregular dusky margin. On the other hand, the control showed the blister much less distinctly, being not as white in colour, the ring being only about 1.2 centimetres in diameter and paler than the surrounding skin. Patients more severely affected with the parasites gave a much more intense intradermal reaction, as compared with carriers, whilst the latter still gave a very decided, although less intense, reaction. The maximum effect was noted from thirty to forty minutes after injection, before it slowly disappeared.

Having thus obtained definite proof of an intradermal reaction with the antigen of ankylostoma on affected patients, and not being satisfied with the first controls, I decided to try the effect of the antigen upon individuals free from infection with this parasite. Accordingly, after repeated micro-

scopic examination of the faeces failed to reveal these organisms in every case, the same test was applied to myself, another medical man, and three male nurses; in every instance no reaction occurred.

Although a large number of individuals afflicted with this disease were not available to secure definite proof of its reliability or for the purpose of making detailed statistics, so as to dogmatize with absolute certainty, still the indications were sufficiently convincing as to its value. Moreover, as it has been shown to have considerable value in detecting even carriers of the parasite, it must be of even greater use in diagnosing the disease itself.

This new study was communicated at the meeting of the Royal Medical Academy at Genoa on December 20, 1929, in the presence of the professors directing the principal clinics. A little later it was learnt that two other workers in New York had tried the intradermal reaction of *Ankylostoma duodenale* and *Necator americanus* in several cases with positive results. Their experiments are still in the tentative stage, and further research is required before a definite pronouncement on their work can be made.

A few observations on antigens in general, as well as this particular antigen, are worth recording. It is well known that antigens, when introduced into the body, are apt to stimulate the production of specific antibodies; thus microorganisms, foreign blood corpuscles, and certain cells cause specific antibodies to be produced and are therefore antigens. Many organic and inorganic substances with a definite chemical structure are not antigens, because their introduction into the body is not followed by the formation of these antagonistic substances—the antibodies.

Repeated doses of various alkaloids gradually render the organism more resistant to their effect (mithridatism), but they do not stimulate the production of antibodies; these alkaloids, then, are not antigens. The toxins of diphtheria, tetanus, ricinus, abrus, and the venom of serpents are all antigens, because their injections are followed by the production of specific antitoxins, as is well known, and these are the toxic antigens or toxins.

Regarding, then, the worms, several authors, such as Faust and Tallqvist, have demonstrated that the toxin of the living bothriocephalus, which causes hæmolytic and anæmia, is oleic acid, a true poison, and not an antigen. Likewise, Degiovanni and Alessandrini showed that the cervical glands of the ankylostoma, when isolated, minced and placed into direct contact with human red corpuscles, produce a marked hæmolytic reaction under the microscope. Loeb extracted from the cervical and cephalic glands a substance with an antiagglutinating action. When one considers the marked anæmic and toxic symptoms presented by the patients affected with ankylostomiasis, well marked even when the affection is slight, when a distinct eosinophilia is present, when

one notes the progressive deterioration in health, leading to death if the infection is not discovered and treated in good time, one may realize that the toxins of the hookworm are certainly very powerful and easily disorganize the bodily functions of the patient, who is stimulated to produce specific antibodies. Thus may be explained the reaction, more or less evident, between extracts of ankylostoma and the body tissues and fluids sensitized by these parasites.

The idea of seeking an intradermal reaction seems just as natural as seeking a complement deviation test in making a serum diagnosis based on the well known principle of the reaction between the antigen and antibodies.

The reaction between antigens and antibodies occurring under definite conditions of the organism leads to the consideration of that much studied phenomenon known as anaphylaxis. In this regard, a clinical theory has been brought forth, according to which the reinjected antigen is disintegrated in the organism containing the antibodies, and the antibodies, together with the complement, lead to a sudden liberation of intermediary products of proteolysis, which are toxic. A rival physical theory claims that the sudden advent of the reinjected antigen leads to a colloidal disturbance of the tissue or fluids in the heart, as the result of the interaction between antibodies and antigens.

Several authors, such as Kopaczewsky, declare that a real microprecipitation takes place in the heart as *in vitro*, producing vascular embolism, violent circulatory disturbances and death.

Others maintain that the reaction causes a physical alteration of the organic colloids in sensitive tissues like the nervous system, where the antibodies would be already fixed on account of the first injection, and which would also attract the antigens of the second injection. Now, whatever the precise reason, it is certain that in the body this reaction between antigens and specific antibodies takes place more or less gradually, but it never fails to occur.

Now if, instead of injecting into the body a large quantity of antigen, only a small drop is injected hypodermically, the reaction between antibodies and antigens will not occur on a large or general scale, but will be limited and will remain localized; but it does not fail to occur. (If no specific antibodies are present, it will not take place.) It is on this principle that the intradermal reaction here described is based.

It is not out of place to record the striking social importance of this intradermal reaction, which, in a few hours, permits one medical man (assisted by a nurse) to make several hundreds of tests and to examine large numbers of persons in an infected or suspected area, for example, in a big mine *et cetera*. In this way infected persons and carriers may be immediately detected, isolated and treated, without

the necessity of sending faeces to a distant laboratory for systematic microscopic examination, causing an enormous loss of time, besides being an unhygienic and unpleasant task at the best. Quite apart from this, the detection of carriers by microscopic examination of their faeces, even if accurate and repeated, is not easy, because of the paucity of eggs which a "carrier" may eject (although the danger of spreading the infection is great), whilst at certain periods the ejection would be practically nil. Nor is there any certainty that hookworms, especially if present in small numbers, will eject eggs every day; some days eggs are ejected, on other days there may be none. This explains many of the negative results of microscopic examination of the faeces even although the individual may be actually infected. In such cases the intradermal reaction would enable a diagnosis to be made independently of the search for the eggs, which may or may not be present in the faeces. The only slight difficulty in the practical realization on a large scale of the value of this reaction may be a shortage of ankylostomi, and consequently of antigen. To overcome this, experimental studies have been undertaken to develop from the eggs contained in the faeces the respective larvae, so as to infect several animals, reproducing in them the adult worms, from which is manufactured the antigen for the intradermal reaction.

#### ANTHRAX IN EAST AFRICA.

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THE author has been for some years in charge of a mission hospital of the Church Missionary Society in Tanganyika Territory and has had the opportunity of seeing several cases of malignant pustule. In all cases typical large Gram-positive square-ended bacilli with central spores were obtained by direct smear from scrapings of the pustules.

The laboratory facilities of that time did not permit of blood cultures being made. The generalized manifestations did not suggest an infection of the blood stream. All patients were treated at the out-patient department and were able to come for treatment daily.

As soon as the diagnosis by direct smear was made at the time of the first visit the pustules were swabbed with carbolic acid (pure) and the excess washed off with sterile water. After that a carbolic foment (one in forty) was applied three times daily. In all cases healing was complete within a period of from ten to fourteen days without serious symptoms. All patients showed slight rise in temperature (37.2° to 37.8° C. or 99° to 100° F.) and some slight degree of general disturbance. Cases

I and II were both Indians, buyers of hides. Of the five native patients, three were children under the age of five years.

No special investigation of the virulence of the organism itself to human beings could be carried out. On inquiry of the Director of Laboratory Services in Dar-es-Salaam, Dr. Clearkin, it was his opinion that the strain of anthrax was in some way less virulent than that found in other countries. There is, in my opinion, no increased resistance to the organism on the part of the native races. The Indians recovered equally well in the same period of time, and it has been the experience of other observers that Europeans and Arabs recover in the same way.

CASE I.—An Indian, a male, aged fourteen years, presented for examination a large inflamed area, five centimetres (two inches) across, above the left ear and spreading to the temple and the ear itself. There was a black, dry slough in the centre, surrounded by an area of blebs. A smear of scraping at the edge of the slough showed typical spore-bearing bacilli. There was some general malaise. The lesion was quite healed in fourteen days.

CASE II.—A native youth, about eighteen years of age, had a typical lesion in the left scapular region; the smear was positive; no malaise was present. Cure resulted in twelve days.

CASE III.—A native child had a lesion of the forehead on the right side. The smear was positive; no malaise was present; treatment was as above. Healing was complete in about fourteen days.

CASES IV and V were those of children under the age of five years from the same family. One had a lesion of the lumbar region, close to the spine, and one of the abdominal skin on the left side. Both showed typical dark central slough and surrounding area of induration and blebs. In no case was glandular enlargement marked or ulceration deep.

The above cases are of interest as the virulence of the organism is undoubtedly less than infections of a similar nature in Australia. The frequency of infection in Tanganyika is due to the fact that the Asiatics deal in hides bought from natives, and to the native custom of sleeping on hides of bullocks in their houses. The native will seldom kill an animal, except for a special feast, such as at the time of marriage or some other important ceremony. It is the usual custom to eat an animal that dies, without regard to the cause of death.

#### THE COMBINED RADIATION TREATMENT IN PELVIC CANCER.<sup>1</sup>

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THE acknowledged aim in radiotherapy is to achieve an effective and homogeneous irradiation with a cancer-destroying dose over the whole area of the new growth, that is to say, the primary

<sup>1</sup> Read at the Fourth Australian Cancer Conference, Canberra, March, 1933.

growth in its full extent and all those tissues and lymphatic areas notoriously and habitually liable to invasion. In any plan for irradiation of the pelvis we must admit the possibility of lymphatic gland spread in all cases, since the liability to glandular involvement is not necessarily proportional to the apparent extent of the primary lesion or to the duration of its existence. The important factor, the unknown coefficient affecting our results, is the degree of tissue resistance in a particular case. It has been the experience of all of us to find serious glandular involvement in cases in which, on clinical examination, the primary lesion appeared to be still at an early stage.

The execution of a plan of irradiation must respect the integrity of the normal adjacent tissues. In the pelvis, the bladder and the bowel, the mucous membranes of which are highly sensitive, are the two sites where an excess of radiation may cause serious damage. The tactical details of our enterprise must be modified according to the anatomical position of the primary growth, the histological type, and to certain accidental conditions.

The cancers frequently met with in the pelvis and capable of being influenced by radiotherapy may be classified as follows, according to their site of origin: (i) carcinoma of the *cervix uteri*, (ii) carcinoma of the *corpus uteri*, (iii) carcinoma of the vulva, (iv) carcinoma of the vagina, (v) carcinoma of the ovary, (vi) sarcoma of the uterus, (vii) malignant chorionepithelioma.

Since carcinoma of the cervix is by much the most frequent and provides the richest harvest of success, I propose to consider it as the main type.

#### Carcinoma of the Cervix.

When we look beyond the primary lesion of cervical cancer and consider the track of its lymph spread, we perceive that the principal path turns towards the external third of the broad ligament and ascends in front of the ureter to end in a gland situated along the external iliac vein in front of the bifurcation of the iliac artery—the pre-ureteral pedicle of Cuneo and Marcille. Lymphatic invasion of this area consolidates its position in the form of a triangle, the inter-uretero uterine triangle. This represents the second stage of propagation and is revealed clinically by the juxta-uterine infiltration of the broad ligament. It is the beginning of the flattening out of the vaginal *culs-de-sac*, but uterine mobility is not yet disturbed. When the attack passes on, the second or hypogastric pedicle is taken, the vessels of which terminate in a gland of the hypogastric group placed on the anterior terminal trunk of the hypogastric artery at the level of origin of the uterine. In the fourth stage the malignant cells push into the posterior lymphatic paths which go to the promontory and which crowd over into the lymphatics of the vaginal dome. The uterus is now fixed, the anterior and the posterior *culs-de-sac* are obliterated, the lateral vaginal *culs-de-sac* are taken. It is the beginning of the last phase, that of the so-called "frozen pelvis".

Now, in the irradiation of this potentially malignant area the most important single procedure is the placing of radium in the vagina and in the cervico-uterine canal. The compass of its effective influence is, however, narrow. Thus, Stahel and Murdoch, of Brussels, working out the curves of isodoses on a water phantom and calculating the energy actually absorbed by the tissues, according to their method in ergs per cubic centimetre, have found that the cervical and uterine mucosae absorbed up to five million ergs per cubic centimetre, or eight times an erythema dose in the vicinity of the uterine tube of radium. The vaginal mucosa itself is found to absorb two to five millions, and, as we go further afield in the pelvis, we find the intensity rapidly declines. At a distance of 4.5 centimetres from the cervix, at the level of the parametrium, the energy absorbed falls to 600,000 ergs per cubic centimetre, which corresponded to a single erythema dose. Such a rapid falling off reveals the weakness of an attack which, though it may achieve at first a local victory, will probably lose the final battle. It is obvious that reinforcements of radiation must be thrown in from another direction.

The available methods for complementary irradiation are:

1. The use of radium at a distance on wax moulds applied ventrally and dorsally. The difficulty of realizing an effective depth dose makes this method unsatisfactory.

2. The intraabdominal applications of radium tubes or radium emanation. The obvious defects are the limited range of action of each tube and the possible danger of sepsis.

3. Teleradium therapy with a mass unit of from five to eight grammes or more of radium.

4. Deep X ray therapy.

The choice lies between teleradium therapy and deep X ray therapy. It is believed, without as yet demonstrable proof, that telecurie therapy is of greater value in the treatment of patients in whom the parametria are invaded. Unfortunately, we have no suitable bomb here in Australia, nor is there any immediate prospect of our obtaining one. It is right, however, that the attention of the authorities should be drawn to the movement in Paris, Stockholm and Brussels towards the employment of greater units for mass radiation. The value of our treatment would be greatly enhanced if in one of the capital cities in Australia such a unit could be installed. We should then have an opportunity of making our own comparison of its efficiency with that of Röntgenotherapy which is actually in use here and which, provided that certain canons are observed, is capable of improving the results from intracavitary radium alone.

#### Complementary Deep X Radiation.

When we seek to employ deep X rays transcutaneously as a complement to the intravaginal and intrauterine radium, we are immediately faced

with questions as to what is the most favourable moment at which to begin and what technique we should employ. The dose, the size and number of the entrance fields, the filtration, the focal distance, these are all important details in the particular technique adopted. On experimental grounds and from clinical experience we believe that the full dose of irradiation should be delivered within a fixed time of not more than three months, in order to avoid the intrusion of the phenomenon of acquired resistance. But after the completion of the standard Regaud technique, when should we begin our deep X ray treatment? Should there be a pause and, if so, for what period? A great deal in radiation depends on the rhythm of our technique. Is there danger of causing necrosis from the overlapping of our fields if the treatment is begun too soon? It is my opinion that the dangerous areas after both the Regaud and the Stockholm techniques are extremely limited and confined to quite small regions of the bladder and rectum. Perhaps the danger is greater with the Stockholm than with the Regaud technique. An important point in treatment is the maintenance of the radiation effect over as long a period as possible, and it would appear that this can be best achieved by commencing deep X radiation some three weeks after the radium therapy. Dosage remains, at least partly, empirical. The epidermicide dose, which Regaud adopts as a biological guide, Coutard has now introduced into Röntgenotherapy. It must never be thought that the dose is merely a physical problem. We have at present but a crude appreciation of the dose destructive for different histological types, and even if we knew this, the response of the particular cancer cell must surely vary with the *milieu* in which it finds itself, be it connective tissue, fat, muscle or bone. Over ten years ago Wintz fixed the lethal dose for the intestinal mucous membrane at 150% of the erythema dose, but this was estimated for a single massive dose, and the rule no longer holds true for modern methods.

There are three chief types of technique available in deep X ray therapy. Pfahler, in 1925, showed that, by using an empirically found logarithmic saturation curve and by giving supplements of radiation after certain short intervals, he was able to maintain full saturation. It was revealed that with this technique the skin would tolerate an essentially higher dose without injury and there immediately appeared to be an improvement in certain of the results obtained. Thus, by a skilful manipulation of the technique, the margin of sensitivity between malignant and normal tissues was increased. Then in 1928 Coutard reported the experiences of the Regaud school with the protracted fractional dosage, in which daily or twice daily an equal dose of irradiation is given over a period of from fourteen to twenty-one days or more, in an effort to bring the Röntgenotherapy method into close parallelism with that of radium therapy, which had provided the first triumphs over squamous epithelioma of the skin.

Lastly, Holfelder, in his technique, has sought to adopt both the principle of resaturation and that of the protracted method of Coutard. He makes use of a procedure known as *Tubus-Kompression*, based on Schwartz's discovery that when the skin is made anæmic by compression, it can tolerate larger doses. To obtain the maximum compression he uses a special spherical domed tube or *Strahlenkegel*, which can be deeply pressed into the small pelvis, and with a single field from in front he is able to deliver a considerable depth dose. He employs two other fields obliquely from behind. For this the patient is made to lie on the tube so that her weight itself gives the necessary compression. With thin individuals these three fields suffice to concentrate in the small pelvis the required dose. With very fat patients, however, it is not enough; another port of entry is required. A perineal field is then employed, six centimetres by eight centimetres or eight centimetres by ten centimetres, in which once again the compression is provided by the weight of the patient sitting on the vaulted dome of the tube.

Recently Molesworth has asked why cannot we incorporate the radium part of the treatment in a general scheme of resaturation of the whole pelvis. This excellent proposition, however, bristles with difficulties that are not merely of a physical character. If, as I believe, in the future development of technique we shall begin with abdominal radiation, using the transcutaneous telerradium or deep X ray therapy and completing the treatment with supplementary radiation, using radium within the vagina and uterus, Molesworth's suggestion will be more practicable, especially if we adopt the Gunsett practice of using an ionometer in the vagina to estimate the dose received at the cervix while X ray treatment is being given. The obvious advantage is that the patient's treatment can be begun straight away in the out-patient department, without the loss of time so fatal to successful treatment, which often occurs between diagnosis of the disease and admission to hospital of the patient.

Coutard's method is the most suitable for cachectic subjects. The danger of cardiac accidents in weak or debilitated patients from the use of large fields in certain techniques is not to be forgotten. But the onerous nature of the Coutard technique makes its adoption difficult or impossible, except in special institutions. Experiment has shown that protracting the treatment protects the white blood system. The fall in the leucocyte count is less marked and the eosinophile cells increase more slowly. The price for these heavy doses is paid by some degree of atrophy of the skin and of telangiectasis, but constitutional symptoms as a rule are avoided and the vascular tissue is spared in a remarkable manner. Wintz, however, has uttered serious warnings as to the possibility of late lesions.

At the Radiumhemmet, Stockholm, and the *Institut du Radium*, Paris, both telerradium therapy and deep X ray therapy are employed, but Heyman was for long far from being convinced of the

superiority of the combined method. It is agreed on all sides that at present the intracavitary radium plays the chief rôle in the cure. But recent figures from Stockholm show an improvement in the results obtained by the combined method, both in the operable and the inoperable cases. The greatest gain, as one would expect, has been in the inoperable cases. Two series of cases were compared: one in which the Röntgen treatment was delivered during the course of radium treatment (which in the Stockholm technique lasts three weeks) and the other in which X radiation was begun from fourteen to twenty-eight days after the radium application. From the experience gained, it would appear that the best results followed when the deep X radiation was begun after the radium therapy, and the optimum time is probably from two to four weeks later. The standard technique, both in radium and Röntgenotherapy, will, however, need to be modified according to the different histological types of neoplasm met with, and because of certain associated conditions.

(a) In adeno-carcinoma of the cervix we are dealing with a type notoriously more resistant to radiation and it is necessary not only to push to extremes the dose, but also to deliver it over a longer period. Probably an increase of 20% to 25% of the ordinary dose is necessary. The results are better than is currently believed, but not infrequently in this cancer, diagnosis is made later than usual. Certainly, blood-borne metastases are more frequent.

Wintz himself claims 47% of five-year cures. Seven weeks after irradiation of the primary lesion with X rays he irradiates the parametria; and in 25 out of 32 cases, recently reported, he supplemented this with radium treatment. He usually delivers 125% of the skin erythema dose at the first sitting, or within three days.

(b) In carcinoma of the residual cervix after subtotal hysterectomy, effective irradiation from the vagina and cervical stump is impossible. As much of the standard radium technique as is possible should be given, and it should be followed by deep X radiation, to which a heavier part is now allotted than in the ordinary case of cervical cancer. The results illustrate the truth of the dictum that in cases in which the standard radium technique is mutilated or imperfect the percentage of cures falls sharply. (We see here support for the argument in favour of the routine use of panhysterectomy for non-malignant uterine conditions.)

(c) When pregnancy is associated with carcinoma of the cervix, it is my opinion that radical operation is best, if it is possible. In inoperable cases the use of vaginal radium therapy with deep X ray therapy may make a subsequent operation possible. The employment of radiation is usually followed by spontaneous abortion. The introduction of radium into the cervix of a pregnant uterus is fraught with grave risks of sepsis.

(d) If a febrile condition is present, it depends on the cause of the fever as to whether we should

abandon all effort at radiation and resort to surgery. If gross infection exists in the Fallopian tubes, obviously the indication is for operation. But where an infected cancerous cervix causes a slight febrile condition without evidence of severe abdominal sepsis, the treatment of the cancer by irradiation is the best treatment of the infection. Vaccines of various kinds have disappointed. It is best to begin with fractional doses of deep X rays. Certainly, the radium treatment should be administered cautiously, tentatively, and intermittently. Small doses should be given and spread over a long period, with intermissions, and always a careful watch should be kept on the temperature chart. We should realize, however, that it is often the trauma of surgical intervention which produces the great catastrophes. The brutal dilatation of an infected malignant cervix is dangerous and harmful, and the passing of a tube into the uterus through the infected zone may be followed by serious extension of the sepsis.

(e) When the cervical canal appears impermeable, a preliminary vaginal treatment may permit us to find the canal some ten days later, but if the way still remains barred or undiscovered, surgery should be seriously entertained as the method of treatment. I repeat, it is impossible to irradiate effectively the lower part of the pelvis from the vagina alone.

(f) In local recurrence after panhysterectomy, heavily filtered radium in the vault of the truncated vagina will play a part secondary in importance to the transcutaneous deep X ray therapy which should be begun immediately after the radium has been removed.

(g) In the "frozen pelvis", that last stage in which a fixed uterus is set fast in the floe of malignant disease, intravaginal radium may hasten a fistula and can achieve nothing. Relief of pain may follow the application of deep X radiation, but combined treatment holds no place, and radiation therapy offers no abiding hope.

(h) In local or pelvic recurrences after full and proper radiation technique has been used, further irradiation is powerless to benefit the patient.

(i) Finally, should we irradiate prophylactically by the combined method, and as a routine, after panhysterectomy? I have had no experience of this practice, but on theoretical grounds it seems to me that the important part is cast for the deep X ray therapy and, I would add, a perineal field. The truncated vagina after panhysterectomy is a poor foyer from which to irradiate the pelvis.

#### Carcinoma of the Uterine Corpus.

The carcinomata of the uterine body vary in histological type and in sensitiveness. The diffuse or anaplastic carcinoma, which is at once the most sensitive and most malignant, is best treated with the sequence: radium, operation, Röntgenotherapy. Here may I enunciate a general principle that surgery without preoperative irradiation in rapidly

growing, highly malignant neoplasms is a fatal error. The malignant papillary adenoma is relatively benign; curettage with intrauterine radium therapy is effective. The malignant adenoma and the adeno-carcinoma are more resistant than squamous-celled carcinoma. Wintz estimates their radio-sensitiveness to be 25% less than the squamous-celled cancer of the cervix. This does not necessarily mean they are less curable, provided the correct technique is used. A higher dose and a longer treatment are essential. The uterus is capable of tolerating these high doses from within, provided sepsis is controlled. A vaginal application of radium should always be simultaneously given, not only because a certain degree of cross-fire is thus obtained, but also because of the frequency of vaginal metastases. The total vaginal dose, however, need not exceed two-thirds of what is given for cervical cancer. The transcutaneous irradiation of the pelvis can be undertaken three or four weeks later. Speaking generally, one can say that the more resistant the histological type, the greater the need for using a resaturation technique.

#### Sarcoma of the Uterus.

The sarcomata of the uterus have a feeble radio-sensitiveness. Of all forms of treatment surgical ablation is the least ineffective. The irradiation of large inoperable sarcomata must be undertaken with care, since there is the same risk of sloughing as in voluminous fibroids. It is possible to cause massive necrosis of a large part of the neoplasm. The cellular portion in such cases disappears and the collagenous framework remains. The tumour may be greatly reduced in size, yet remain uncured. The protracted fractional dose, while suitable for epidermoid cancer, is not necessarily the best procedure for connective tissue growths. New growths like lympho-sarcoma do not need it. The simple massive dose may be the most valuable, provided that there is no danger in suddenly flooding the patient's circulation with toxins from the destroyed cells. The Wintz technique of massive dose may be best for uterine sarcoma if a radiation technique must be attempted, but the value of employing also intrauterine and intravaginal radium cannot be disregarded.

#### Chorionepithelioma.

The chorionepithelioma is embryonic and sensitive. Treatment of it should begin with deep X radiation. If the patient's general condition permit, the massive dose method is the procedure of choice, but where there is grave weakness Coutard's technique is safer. Six weeks later, the cure should be completed with intrauterine and vaginal radium. One must be careful not to give an overdose. Wintz fixes the chorionepithelioma dose at 80% to 90% of the *Haut-Einheits-Dosis* and the dose delivered should be 25% below that for squamous carcinoma. The distant metastases, which are frequent, are conveniently and efficiently treated with deep X ray therapy.

#### Carcinoma of the Ovary.

In this confused welter of pathological types the scope for combined irradiation is very restricted. First, only a small percentage are radio-sensitive, most of the growths being adeno-carcinoma (70% in the Tübingen statistics). Secondly, their size (which frequently gives the first diagnostic hint) makes a complete irradiation difficult and even dangerous. In all cases a preliminary laparotomy is advisable. It may be possible to remove a large portion of the tumour, although complete excision is impossible. The partial extirpation of a cancer, abhorrent to our surgical principles, can nowadays be justified when preoperative or immediate post-operative irradiation is practised. In the post-operative irradiation it is essential that the combined method be used, and so, if possible, the uterus should be retained as a foyer for irradiation of the lower part of the pelvis. The possible association, however, of malignant disease of the uterus with cancer of the ovaries, which occurs in some 5% of cases, should never be overlooked.

#### Carcinoma of the Vagina.

In carcinoma of the vagina the chief rôle falls to the intravaginal radium which should be highly filtered and administered in small doses over a protracted period. The inguinal glands require to be brought within the scheme of the deep X radiation and there need be no interval between the use of radium and that of the X ray therapy.

#### Carcinoma of the Vulva.

In carcinoma of the vulva the tendency to late necrosis after radiation and the ever-present element of sepsis should be remembered. This late secondary necrosis is notoriously frequent in moist areas. The association of telerradium or deep X radiation with local diathermy (as practised at Stockholm) may be the best procedure.

#### Cancer Treatment in Australia.

When we turn to consider in what manner we may improve our methods of treatment in uterine cancer here in Australia, we are at once impressed with the numerical insufficiency of our high voltage installations. The X ray therapist cannot cope with the material offering. Because of the inadequate number of deep therapy plants it is frequently impossible to carry out at the correct time and with the proper rhythm the essential parts of a planned technique. The radiotherapist finds himself snowed under with the rejects and the discards from every other form of treatment, and the precise and correct execution of a technique according to prescribed plan becomes impossible. In the press of work a compromise is always being made between what the radiotherapist should, and what he can, do, and in radiotherapy the next best is usually bad. If we but think of the careful attention which each individual case requires, the nice adjustment of time and dose which is necessary, we realize how unfair are the demands made on the limited resources of our X ray

therapists, how impossible it is for them to carry out the minute details on which the balance turns to success or failure.

I am personally convinced of the benefits gained from the combined method. But I am no less persuaded that our gains have been made because of the effect on the primary lesion and its local extension. Where the pelvic glands are already invaded by malignant epidermoid cancer cells, I doubt if our permanent cures are increased. I doubt, indeed, if such cases are ever cured by radiation. The malignant process may be held in check temporarily and the number of partial cures be made greater, but the absolute cure rate, once the lymphatic glands are involved, is not higher. I cannot bring figures in proof of this assertion, but it is based on considerable clinical experience. And there is a strong case for an argument based on analogy. The squamous-celled carcinoma of the cervix is histologically similar to the common form of epithelioma in the lip and the tongue. With epithelioma of the lip the lymphatic glands are invaded late and comparatively rarely. We can achieve splendid results from the proper local treatment of the primary lesion with radium. In 80% of these cases, if the lymphatic glands show no clinical involvement at the time of radium treatment, no glandular metastases ever appear. In the tongue the position is different. This mobile organ, by its movements, sprays the lymphatics with cancer cells, so that lymphatic gland invasion is early and frequent. And thus our radium therapy of the tongue is frequently successful, but our effort makes shipwreck on the secondary spread to the cervical lymphatic glands.

We must face the position frankly. In the presence of a proved invasion of lymphatic glands by squamous epithelioma we seldom gain more than the consolation of a fugitive success. The enlarged glands that surgeons and radiotherapists most often cure are inflammatory. We do not permanently cure epitheliomatous glands by radium puncture. We never cure them by surface application on wax at a distance of three or four centimetres. Deep X rays may give us the illusion of a temporary abatement in cancer activity and the deceiving mirage of a reduction in tumour mass. Teleradium would appear to offer us the best chance of permanent success, according to Berven. The problem of the radiotherapist which remains unsolved is the problem of secondary carcinoma of lymph glands. For, if our achievement is so poor in a region as accessible as the neck, what can we hope from the malignant lymphatic glands in the fastnesses of the pelvis? If we understand this, we perceive the limitations of radiation treatment in cervical cancer. Squamous epithelioma of the *cervix uteri* spreads to lymphatic glands with a rapidity and a frequency that place it intermediate between the squamous epithelioma of the lip and that of the tongue. We have, as a result of the combined treatment by radiation, greatly improved our capacity to cure the local spread of the primary

lesion, even when it has passed far beyond the safe boundaries for surgical endeavour. But once the glands become invaded, we find ourselves in the same position as we are with lingual epithelioma. We cure the primary and slow up the malignant process in the lymphatic glands, but, hidden away in the distant recesses untouched by effective irradiation, the cancerous activity goes on.

I cannot see what further progress can be made in the treatment of uterine cancer until we have solved this problem of why secondary squamous carcinomata in lymphatic glands respond so badly to radiation. It is surely a question of the *milieu* in which the malignant cells find themselves, for it is the reaction of the host tissue in which these cells are uninvited guests which determines the final result.

The scirrhous carcinoma cells in fatty tissue react badly, as do squamous epithelioma cells which have invaded cartilage. It is not merely a question of delivering a cancer-destroying dose to the malignant cells; we win or lose according to the response of the surrounding tissue. Each tissue reacts in a specific manner to radiation, and the optimum dose is not always the same.

## Reports of Cases.

### THREE CASES OF CEREBELLAR TUMOUR.<sup>1</sup>

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THE cases about to be described are considered to be worthy of reporting, not only from their interest in anatomical and pathological diagnosis, but more particularly as they indicate that deliberate two-stage operations upon the cerebellum are feasible, and might more often be used. Professor Harvey Cushing, in his recent review of over two thousand cases in his own hands, advocates a single stage operation whenever possible; and obviously, the greater the experience of the individual neuro-surgeon, the less frequently will he be faced by the necessity for a two-stage performance. But in smaller communities, where such cases are not of frequent occurrence, there can be no doubt that the two-stage operation will result in a much lower operative mortality rate, with an increasing number of patients who will be capable of standing up to the removal of a tumour at the second stage. The two factors which chiefly militate against the success of a one-stage operation are, first, the hemorrhage encountered during the exposure of the cerebellum, and secondly, the great vulnerability of the medulla in patients suffering from internal hydrocephalus of long duration. This latter factor is the more important of the two, and, particularly in children, is the commonest cause of death during, or immediately after, the operation.

It has been said that the adhesion of the suboccipital muscles to the underlying cerebellum prevents satisfactory exposure of the cerebellar lobes at the second operation. Two of these cases will help to show that this is not so, but that the regeneration of the dura is a rapid process, and that the new dura (to quote Wilfred Trotter) acts as a definite "insulator" from the mesoblastic tissues. Admittedly, the step of turning down the flap of sub-

<sup>1</sup>Two of the patients described herein were shown at a meeting of the Section of Clinical Medicine of the South Australian Branch of the British Medical Association in August, 1932.

occipital tissues is slower than at the preliminary operation, where one has the resistance of the occipital bone upon which to work, and this is, of course, lacking at the second stage. But if one exposes the margin of the bone defect first, and then works from bone toward the defect, the separation of muscles from brain or dural membrane is not difficult, but only tedious.

#### Case I.

The first case was that of Mrs. Mary S., aged twenty-nine, who was admitted to the Adelaide Hospital in June, 1932, in the seventh month of her second pregnancy. According to the patient, at the end of her first pregnancy, her sight began to fail, but recovered entirely after confinement. And now history apparently was repeating itself; she had vomited for the last three months, and the vomiting was becoming progressively worse; for more than a month she had complained of frequent headaches and failure of vision. The latter became rapidly worse, and when she was admitted to hospital she had no perception of light. Bilateral papilloedema up to six diopters was present; there was some controversy on the state of the retinae, as it was held that it was a case of retinitis and blindness of pregnancy. But Macewen's "cracked-pot" sign was definitely present, and there was no albuminuria or any alteration in the blood urea. The consensus of opinion was that the pregnancy should be terminated. Accordingly, this was done, but with no improvement in vision or any cessation of vomiting. She was then transferred to the surgical department. Repeated examinations by several clinicians had failed to disclose any sign whereby a tumour, if present, could be localized. Feeling that the rapid depreciation in her general condition did not warrant further delay—there was then practically no hope of recovery of any vision—a right subtemporal decompression was done immediately, a very tense brain being exposed. Puncture of the right ventricle, done at the same time, yielded about 150 cubic centimetres of cerebro-spinal fluid, which was normal, except in regard to its pressure and quantity, which were enormously increased. After this operation the vomiting ceased entirely, she ate ravenously, and her general condition improved.

One point of interest at this stage was that after the decompression her bowels acted as frequently as eight to ten times daily. I have noticed this to follow decompression in several cases of advanced hydrocephalus, and in the light of Harvey Cushing's recently expressed theories,<sup>10</sup> it is probable that this overactivity of the vagus was due to release of pressure upon the mid-brain.

However, improvement did not last long, and within a week it became obvious that life would not be much prolonged by the subtemporal decompression alone. In a further endeavour to localize the obstruction, a ventriculogram was performed, and 140 cubic centimetres of cerebro-spinal fluid were replaced by 100 cubic centimetres of air. The X ray picture was typical of that found in cases of posterior fossa tumour, with marked symmetrical dilatation of the lateral ventricles and dilatation of the third ventricle. The cerebellum was exposed, and a large oval subpial tumour, 2.5 centimetres in its greatest diameter, was removed from the lower and lateral aspect of the right lobe. Histologically, the tumour proved to be a meningioma, a rare tumour in this situation. Dr. Bull reported that sections showed a meningioma of very vascular type, a hemangioma-endothelioma; encapsulation did not appear to be complete.

It is not unusual to find so large a tumour giving rise to no cerebellar signs when in the mid-line; but in the situation which this tumour occupied, one would have expected to find some localizing signs; but neither before nor after removal have any signs been found to signify interference with the right cerebellar lobe.

This operation, in effect, was a two-stage procedure; and there can be little doubt that an attempted one-stage removal would have ended fatally, except in the most experienced hands. As it was, the few days following removal were full of anxiety; but she is now (March, 1933) in normal general health, but totally blind. But even so, she is able to do much of her housework and to care for her child. To quote Horrax,<sup>11</sup> this case illustrates two

very important points: (i) That in over 90% of cases with papilloedema the cause is an intracranial tumour; (ii) that in such cases, once vision is lost, it is never regained.

#### Case II.

Albert W., aged seventeen, was a boy who in appearance and development resembled a man of twenty-five or so. For ten weeks he had complained of headache, occasional vomiting, and a tendency to bump into people on his right hand side; when standing with his eyes closed, he tended to fall backwards and to the right. There were no signs of asynergia or dysmetria. Both disks showed four diopters of swelling; he yielded a typical cerebellar ventriculogram, such as described above.

In April, 1932, a suboccipital craniotomy was performed, during which very troublesome bleeding was encountered from emissary veins in the mid-line and mastoid region, and from veins around the *foramen magnum*. A bulging right cerebellar lobe which extended across the mid-line was exposed. By this time it was considered that the patient's condition did not warrant further exploration, and the operation was terminated, after removing the posterior arch of the atlas.

In passing, it is not altogether superfluous to emphasize that no cerebellar decompression is complete or adequate unless the tonsils of the cerebellum, which are herniated into the *foramen magnum*, are freed; and this nearly always requires removal of the arch of the atlas as well as the posterior margin of the *foramen magnum*. Needless to say, there is no decompression at all unless the dura is widely opened.

It was intended to complete the second stage in seven to ten days, if possible. But the patient's condition improved so rapidly that it was unwisely decided to allow him to go home and await further events, as no tumour had actually been disclosed. And it was three months before he returned, with a recurrence of vomiting. The evidence of regeneration found at the second operation in July, 1932, was amazing. Areas of regenerated bone, of the size of a postage stamp, were encountered, solid enough to require bone forceps to remove them. Beneath this layer, the *dura mater* had regenerated as a complete covering over the cerebellum. The process of freeing the *dura* from the subjacent brain tissue was very tedious, but eventually the right lobe was completely exposed. As there was no evidence of a tumour on the surface, the lobe was incised vertically by the endothermy knife to a depth of about 1.5 centimetres, and a large cyst was opened, containing clear straw-coloured fluid; the quantity could not be measured, but on retracting the margins of the cyst, the cavity appeared large enough to accommodate a golf ball with ease. The cyst wall consisted of a smooth, yellow, hyaline tissue, and extended well across the mid-line, the underlying brain stem causing a bulge in the floor of the cyst. On the assumption that it was probably a cyst associated with an astrocytoma, as described by Cushing,<sup>12</sup> a thorough search was made, but no evidence of a neoplastic mural nodule could be found. A small plaque, about 0.5 centimetre in diameter, of dark brown colour, was found and removed; but it was reported by Dr. Bull as being "vascular and hyaline tissue, with much hemorrhagic extravasation, but no other cells which would assist in indicating the nature and origin of the cyst". In removing this plaque, the roof of the fourth ventricle was penetrated and cerebro-spinal fluid gushed up in large quantities.

The patient went home three weeks after the second stage. In February, 1933, he reported for observation; he resumed work as a market gardener in October, 1932, and had been at work ever since. His only complaint is that he still bumps into people walking on his right hand side, and when walking with his eyes shut he deviates strongly to the right. But he is able to dance and waltz without discomfort to himself or danger to others.

Non-neoplastic cysts of the cerebellum are of such rarity that one must regard this as a case of neoplastic cyst in which the causal neoplasm was not discovered, with the great probability of recurrence in the next two or three years. Only in the event of complete freedom from recurrence can it be classed pathologically as a simple cyst of the cerebellum.

## Case III.

Joan F., aged four years, had suffered for six months from headache and snoring. Her tonsils and adenoids had been removed without benefit. Then morning headache became constant, and vomiting progressively frequent, until, when seen at the end of December, 1932, she was listless, apathetic, and weighed only 10.8 kilograms (twenty-four pounds). Her urine was heavy with acetone, and she was obviously going down hill from sheer starvation. Apart from a tendency to hold her head in the right cerebellar posture, there were no positive signs, except those of internal hydrocephalus; these were bilateral choked disks of about three diopters, Macewen's "cracked-pot" sound, which was well marked, and X ray evidence of widening of the sutures, and convolutional pressure marking. The preoperative diagnosis was that of cerebellar tumour, in the mid-line or the right lobe, probably the former.

The immediate question was one of decompression only. By complete rest in bed and glucose given *per rectum*, the vomiting was checked sufficiently to allow her to take enough nourishment to abolish the acidosis. This occupied five days, and on December 20, 1932, under "Avertin" and local anaesthesia, she stood up very well to a wide exposure of the cerebellum, with resection of the arch of the atlas. Preliminary ventricular puncture permitted the dura to be widely opened without any laceration of brain tissue due to bulging. A large, solid, greyish-brown tumour was exposed in the mid-line, arising apparently from beneath the lower end of the vermis (it was later found to be arising from the posterior surface of the medulla and floor of the fourth ventricle). The tumour was well defined from the lateral lobes, and sent prolongations down through the *foramen magnum* and forwards on either side of the medulla. A small piece was taken for histological examination, and the wound was then closed.

She was a wonderfully good and phlegmatic patient, and in three weeks she gained 2.7 kilograms (six pounds) in weight. Under a similar anaesthesia, the wound was reopened three weeks after the first stage. The suboccipital muscles were easily raised from the cerebellum, as a definite dural membrane was already regenerating between the two structures; by that time no bone had regenerated. With the endothermy loop the tumour was "scaloped" away piecemeal, but one was obliged to leave a portion of the tumour at its site of origin from the medulla, for fear of causing fatal damage. The sutures were removed in six days, and by this time the skin wound had completely healed. For a week or more there was an increased suboccipital bulge, which eventually subsided, and she returned to her home in the country four weeks after the second operation, able to walk quite well, eating well, and with a lively disposition, in marked contrast to the apathy shown before decompression.

The histology of the tumour is in doubt, as different areas in the section varied so much; but it is probably an ependymoma. Owing to the failure to obtain complete removal, it is certain that recurrence must be expected, nor can one ever hope to make a complete removal at a later date, in view of the site of origin of the tumour from the medulla.

This case might have been dealt with just as satisfactorily in one stage by a sufficiently experienced operator, but under the prevailing circumstances it was infinitely safer to perform the operation in two stages; and the fact that a preliminary operation had recently been performed in no way hampered the major stage, nor did it interfere with wound healing. Probably three weeks was an unduly long interval between stages, and in any future case one would aim at an interval of from seven to ten days, when it would be easier to define and separate the various layers.

Another point of interest about the final case is that the patient demonstrated the fact that these children, with hydrocephalus due to cerebellar tumour, benefit greatly by complete rest in bed. It results in a diminution of vomiting, which enables them to take more food, and lessens the liability to an acute "cerebellar seizure", which is a constant and fatal menace in the advanced cases. A few days thus spent are more than justified, and, amongst other things, it accustoms them to the strange conditions

and surroundings in which their post-operative treatment will be carried out. In all such cases this preliminary rest and methods of dehydration of the brain should be carried out, with a view to improving the patient's chances of tolerating the subsequent operations. This delay will be contraindicated only in those cases in which the patients are rapidly progressing to blindness.

## References.

- <sup>1</sup> Harvey Cushing: "Peptic Ulcers and the Interbrain", *Surgery, Gynecology and Obstetrics*, July, 1932.
- <sup>2</sup> Gilbert Horrax: "The Significance of Papilloedema to the Neurological Surgeon", *Archives of Ophthalmology*, Volume LIV, 1925.
- <sup>3</sup> Harvey Cushing: "Experiences with Cerebellar Astrocytomas", *Surgery, Gynecology and Obstetrics*, February, 1931.

## Reviews.

## DEFECT IN SPEECH.

On the title page of "Correction of Defective Speech," Twitmyer and Nathanson, the authors, claim that the book is "a complete manual of psycho-physiological technique for the treatment and correction of the defects of speech".<sup>1</sup> But its precise scope and object is not clear; the preface less comprehensively states that the chief value of the book lies in its collection of speech material (some three hundred pages of words and sentences, for example, "the pupil put the pile of apple peel in the pail") for use in "any unit theory of etiology".

At any rate, apart from a most fragmentary reference in a confused chapter on "the psycho-physiological approach" there is no descriptive or analytical account of speech disorders, nor is there any specific exposition of technique of treatment, both of which a practitioner expects to find in a book of some 400 pages.

Clear thought is lacking throughout the scanty pages given to exposition. The authors on the one hand disclaim any specific theory, yet on the other say they "cannot over-emphasize" the value of their therapeutic speech exercises for such diverse defects as, for example, amputated uvula, deafness, "negativism," cleft palate and "profound stammering". While implying that they have pioneered methods which have superseded the old, they merely offer the time-worn elocutionary theory that the basic factors in speech troubles are correct breathing and oral placement (these being discussed under "psychological approach to the subject"). There are also exercises for the body generally, and for the jaw, lips, cheek and tongue.

Both authors are teachers of psychology in the University of Pennsylvania, and state that an understanding of the "personality equation" is indispensable. But beyond this bare generalization they offer scarcely any practical comment on, or differentiation between, the psychological factors in different speech defects, and the extent to which they are present, if at all. That the psychological factor may be altogether different in, say, cleft palate and stammering is not even obscurely touched on.

On the subject of stammering which has interested observers and writers for many years, it is said: "The more involved etiological factors in the syndrome of stammering . . . remain a challenge." A comprehensive analysis of these etiological factors has been given in this journal and elsewhere at different times. The authors' lack of understanding of the psychology of stammering, and hence of the effective and appropriate methods of treatment, is lamentable.

The authors direct a corrective speech clinic, but the book is almost totally devoid of clinical illustration.

One must admire the industry and ingenuity the authors have shown in an original classification of speech sounds and its development by some three hundred pages of speech exercises on the "frequency words" of speech. For those requiring exercises to correct defective articulation this book may be recommended. For the general medical practitioner and even for the psychiatrist it will be useless.

<sup>1</sup> "Correction of Defective Speech: A Complete Manual of Psycho-Physiological Technique for the Treatment and Correction of the Defects of Speech", by E. B. Twitmyer, Ph.D., and Y. S. Nathanson, Ph.D.: 1932. Philadelphia: P. Blakiston's Son and Company. Demy 8vo., pp. 428.

# The Medical Journal of Australia

SATURDAY, MAY 27, 1933.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

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Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

## MEDICAL RESEARCH IN ENGLAND AND AUSTRALIA.

THE annual report of the Medical Research Council of Great Britain is always an interesting and important document. That for the year ended September 30, 1932, presented to the Imperial Parliament in February, 1933, is no exception. It is customary each year to make reference to one or more of the aspects of the report in these pages. On this occasion we propose to draw attention to the scope of the Council's activities, for its ramifications are like the roots of a stately and widespreading tree, and to point the way for the inception of similar work in Australia. The foundations of the Medical Research Council may be regarded as having been laid at the time of the passing of the *National Insurance Act* in Great Britain in 1913, when the sum of one penny per contribution was provided out of consolidated revenue for a purpose known as "sanatorium benefit". This contribution amounted to £57,000 *per annum*. In accordance with the Act, the National Health Insurance Joint Commission was required to organize a department which should endeavour to extend the knowledge

of the nature and causes of tuberculosis and other diseases. After inquiry as to the best way in which the available money might be spent, the Medical Research Committee was formed under the chairmanship of Lord Fletcher Moulton of Bank. This committee had certain salaried officers and subsidized workers in different parts of the United Kingdom. The committee suffered ups and downs owing to the depletion of its revenue during the latter years of the Great War, and at the end of the war it became evident that the scheme of medical research did not fit in well with the organization of national health insurance. The result was that on March 11, 1920, a committee of the Privy Council was appointed to perform the duties previously carried out by the Medical Research Committee. This committee drafted a charter for the creation of a corporate body known as the Medical Research Council. It is not necessary to describe the constitution of the Medical Research Council, but it should be made clear that it had all the powers of a corporate body and that all its members, except those who were members of Parliament, were paid for their services. At the present time the Committee of the Privy Council for Medical Research comprises the Lord President of the Council (Chairman), the Minister of Health (Vice-Chairman), the Secretary of State for Scotland, the Secretary of State for Home Affairs, the Secretary of State for the Dominions, the Secretary of State for the Colonies, and the Secretary of the Medical Research Council (Secretary). The Medical Research Council consists of the Right Honourable the Viscount D'Abernon (Chairman), Lord Mildmay of Flete (Treasurer), Mr. W. S. Morrison, M.P., Professor J. J. R. Macleod, F.R.S., Dr. Wilfred Trotter, F.R.S., Sir Charles Sherrington, F.R.S., Dr. J. A. Arkwright, F.R.S., Lord Dawson of Penn, Professor E. Mellanby, F.R.S., Professor E. D. Adrian, F.R.S., Professor A. E. Boycott, F.R.S., with Sir Walter Fletcher, F.R.S., Secretary. The report of the Medical Research Council is made to the Committee of the Privy Council for Medical Research and this body presents the report to His Majesty the King in Council.

The extent of the work of the Medical Research Council may be gauged by the report. Mention must

first of all be made of the National Institute for Medical Research. This body was created by the Medical Research Council; it is situated at Hampstead, London, and has farm laboratories at Mill Hill. It has a large staff, with attached workers and visiting workers; its investigations cover a wide field. Perhaps the most important work at present being done at the Institute is the determination of biological standards and the investigation of methods of biological assay and measurement. The Department of Clinical Research conducted at University College Hospital, London, presents another aspect of the Research Council's work. This department has been referred to on previous occasions in this journal. It should be noted that the Rockefeller Foundation has lately endowed in perpetuity the Directorship of the Department, a post held with great distinction by Sir Thomas Lewis. The Council is also interested in the Industrial Health Research Board, a body which it founded in conjunction with the Councils for Industrial and Agricultural Research. Lastly, the Council gives subsidies to various research schemes throughout the United Kingdom and also awards certain travelling fellowships. During the year under review the Council received from Parliament a grant-in-aid of £139,000, this amount being £9,000 less than that received during the previous year. Of this amount £8,500 was spent in administrative expenses; £51,500 was spent at the National Institute for Medical Research. Research grants, research work in clinical medicine, statistical inquiries and the investigations of the Industrial Research Board consumed £79,000. Owing to the reduction of the grant-in-aid, the financial resources of the Council were severely taxed and the Council acknowledges the receipt of financial assistance from private sources.

Much of the work of the Medical Research Council has been discussed in this journal during the past twelve months, and though it is impossible to give further details at present, it will be quite evident to all our readers that the Council is doing work of national importance, work that is indispensable and work that must not be allowed to languish for want of funds. From this record of achievement in Great

Britain thoughts will naturally turn to what is being done in Australia. Here the picture is not so bright, though the outlook is more hopeful than it was a decade or two ago. The Royal Commission on Health which took evidence in Australia in 1925 recommended *inter alia* that the Commonwealth should by act of Parliament establish a health research council constituted along certain stated lines and that the Government should provide a special appropriation or endowment of £30,000 *per annum* in aid of health research. Many of the recommendations of the Health Commission have been brought to fruition, but health research has been neglected. It is remarkable that the State is prepared to spend money on the prevention and cure of disease in plants and animals and on research into the causes of these diseases, but that it apparently cares little about the discovery of causes of and cures for disease in human beings. Certainly the Commonwealth bought radium and is using it wisely in the treatment of cancer, but this is merely one small part of what is required. As a result of private and public benefaction and of university endowment (albeit on a small scale) useful but limited research has been and is being carried out. But these benefactions are not in so healthy a state as they were. For example, the Baker Institute has been forced to curtail most of its activities and the members of its staff have been compelled to accept what is barely sufficient to provide for the necessities of life. Wider vision is needed. The new Federal Council of the British Medical Association in Australia should make this subject one of the first that it will consider. If the Federal Council does nothing else, it should bear in mind the inevitable establishment by the Commonwealth Government of some kind of sickness insurance. If and when such an insurance scheme is established, a small portion of the contribution, even a penny or two a week, should be earmarked for research purposes. It is quite unreasonable and exquisitely foolish to make provision for insuring the public against sickness without at the same time doing something to unravel the causes of that sickness and so to prevent it. Such a common sense idea would appeal to most people in the community. The whole burden, how-

ever, must not be borne by those who would be compelled to insure themselves under such a scheme; the Government, as representative of all the people, should shoulder the main portion of the endowment. It is no use at this stage arguing, as certain are bound to do, about the control of an Australian research Council; it will be time enough to do that when the need for such a council is recognized.

## Current Comment.

### NEPHRITIS.

NEPHRITIS is one of the bugbears of the pathologist and in particular of the academic teacher. It is difficult to assemble the known facts of morbid anatomy and biochemistry and the bedside findings in such a form that a coherent and simple picture is presented to the inquirer. In particular there is considerable difficulty in the question of the origin of the most important variety of non-surgical renal disease, acute or chronic glomerulo-nephritis. The controversial battles that have raged over nephrosis tend to make us forget that it is an uncommon condition. The easily remembered anatomical picture of the "granular contracted" or ischaemic kidney of hypertension may obscure the fact that sufferers from this syndrome die from actual renal disease but seldom, in spite of the universal occurrence of renal arterial changes among them. These considerations perhaps blind us to the great importance of that not infrequently insidious disease, nephritis, attacking the glomerular structure and leading to progressive, certain and serious impairment of renal function. Scarlet fever leaps to everyone's mind. But every general practitioner has seen more patients with chronic nephritis than he has patients with nephritis following scarlet fever. Streptococcal throat infection is widely accepted as the cause, apart from scarlatina. What is the evidence? O. L. V. de Wesselow, working in one of the several clinics in London actively interested in nephritis, recently gave a preliminary account of an important means of attacking this problem.<sup>1</sup> He remarks that there is a "general feeling" that streptococcal infection is the causal agent, and in order to test the validity of this he has begun at the other end, so to speak. He is investigating and following up patients suffering from tonsillitis and has records of 134 to date. These patients are examined with special reference to renal affections and are followed up for several weeks, for experience with scarlet fever and other streptococcal throat inflammations teaches that there is a latent period of several weeks before the kidney shows signs of trouble. The supposed "febrile" albuminuria he does not include. He finds that there is no special reason to implicate the haemolytic streptococcus in par-

ticular, but his figures for streptococcal infections of the throat in general are interesting. The percentages of throat swabbings in which streptococci were found rose from 12% in the month of August to 26% in September and to 35% in October. This seasonal incidence, rising as the year wanes, is perhaps significant. But even more interesting is the finding that albuminuria was discovered after about twelve to nineteen days in 5% of cases in August, 16% in September, and 28% in October. The streptococcus definitely has a charge to answer, even upon purely circumstantial evidence. The albuminuria was copious, with some casts, but no blood was found, and there was no oedema noted in any patient. Symptoms were entirely absent, a matter of some importance. Further follow-up investigations of this group will be instructive. Pursuing the question of the actual pathogeny, de Wesselow considers the rôle of cold, long blamed by clinicians for the onset of nephritis. In war nephritis there did seem to be some evidence that this was a possibly important factor. Cold, he points out, causes vaso-constriction, and it is known that glomerular ischaemia occurs in glomerulitis, and that a rise in blood pressure occurs before albuminuria is noted. Whether cold can act directly upon the kidney or operates indirectly is another matter. Bohn reported that he found a pressor substance in the blood of sufferers from chronic nephritis and hypertension. De Wesselow cannot confirm this. Apart from this supposition it is, of course, generally considered that the bacterial invasion causes a toxic spoiling of the delicate renal cellular and vascular mechanism.

A. Ellis, in contributing to the discussion on this communication, remarks that the curious latent period that is noted between the pharyngeal infection and the onset of kidney symptoms is probably associated with the development of partial immunity to the invading streptococci. He also has failed to demonstrate the presence of pressor substances in the blood.

Turning to the practical consideration of treatment, several important things emerge from this discussion, not really new, but worth restating. First, tonsillitis should be treated seriously. Rest should be adequate, and urinary examination should be carried out within three weeks. If any considerable degree of proteinuria is found, further and sufficient rest in bed should be advised, cold should be guarded against, and perhaps alkalis given. Tonsillectomy after recovery is advisable, but it should be remembered that it is not a safeguard against other infections of the pharynx. Latent tonsillar infections are not mentioned specially in this discussion, but should not be forgotten. Finally, when actual nephritis occurs, the heart and circulation should not be neglected. Ellis lays stress on this, and pointing out that enlargement of the heart occurs in severe renal inflammations and that there is risk of congestive failure, he supports Volhard in urging that the encouragement of the circulation in a crisis may save the patient's life.

<sup>1</sup> *Proceedings of the Royal Society of Medicine*, January, 1933.

## Abstracts from Current Medical Literature.

### OPHTHALMOLOGY.

#### Ophthalmoplegia Externa.

E. STIEREN and G. J. MCKEE (*The Pennsylvania Medical Journal*, November, 1932) explain the greater frequency of optic nerve disorders as compared with affections of the three motor nerves, in association with sphenoidal and ethmoidal infections. The optic canal is in close association with the sphenoidal sinus or a post-ethmoidal cell. Optic nerve disorders arise secondary to hyperplastic bone changes in the sphenopostethmoid region. The motor nerves in the soft confines of the sphenoidal fissure are said to be subjected to a toxic secretion (which Sluder believed to be bacterial, but could never prove) from a hyperplastic sphenoiditis which, if acute, results in paralysis of the nerves. A case of left-sided ophthalmoplegia is reported. The X ray report indicated suppurative sphenoiditis and ethmoiditis on the left side. Resection of the septum, turbinectomy with exenteration of a suppurative ethmoidal labyrinth, and drainage of the sphenoid, resulted in recovery.

#### Early Grafting for Burns of the Eye.

G. B. O'CONNOR (*Archives of Ophthalmology*, January, 1933) believes that grafting should be done early for burns of the eye from lime, ammonia, acids and hot metals. By "early" is meant at the first treatment, or as soon after as the existing conditions permit. If this is not done, decomposition of the chemical processes in the burnt conjunctiva affects the nutritive material of the cornea, causing secondary infiltration of the same. An impression of the raw area is taken with Stent's composition. Buccal mucous membrane or a thin Ollier-Thiersch graft obtained from the inner aspect of the arm is the material used. The graft is sutured to the denuded area with arterial silk sutures and the Stent's material sutured in position to splint the graft. The procedure may be varied by placing the graft over the model, with the epithelial surface towards the model, and placed and sutured in position. Central lid suture with the canthi left open for drainage gives the best approximation of the lids. A special warning is given in the case of ammonia burns. Even a week after injury a destructive lesion of the globe may occur.

#### Progressive Exophthalmos.

H. C. NAFZIGER (*Archives of Ophthalmology*, January, 1933) deals with the subject of progressive exophthalmos after thyroidectomy. After excision of the thyroid in these cases,

clinical improvement follows, but the exophthalmos, instead of disappearing, actually increases, sometimes with ulceration of the choroid and loss of the eye. Even after enucleation there have followed infection of the orbit, intracranial extension and death. Certain theories of causation are mentioned, such as an increase of retrobulbar fat, sympathetic stimulation of the smooth musculature of the orbit, and retrobulbar venous engorgement; the author states that none has been proved correct. His operative treatment is a complete removal of the orbital roof by an intracranial approach. The orbital fascia and ring of Zinn are opened for purposes of decompression and to permit expansion of the contents of the orbit and the optic foramen. Such a wide exposure allows detailed study of the orbital structures, including the extrinsic muscles, the fat, the vessels and the optic nerve. In each instance abnormalities were found in the extraocular muscles. These were enlarged three to eight times the normal size. In some cases the muscles had a pale, oedematous, half-cooked appearance, in others they were of a deep colour. Histological findings consisted in varying degrees of degeneration of the muscles, fibrosis and cellular infiltration. Four patients were operated upon, with improvement of the proptosis and vision, subsidence of papillitis, and disappearance of the hæmorrhages. In the discussion that followed the reading of the paper, W. S. Benedict said that since the use of combined tincture of iodine and compound solution of iodine there had been no case of marked exophthalmos at the Mayo Clinic that could not be kept under control. The operation should be resorted to only in extreme cases.

#### Glaucoma.

E. E. MADDOX (*British Journal of Ophthalmology*, March, 1933) believes that the high frequency current is a useful addition to the ophthalmic armamentarium in the treatment of glaucoma in moderately hypertensive eyes. The application is made against the temporal margin of the orbit for one to four minutes, and though the effect is transitory, repeated doses do good in the long run. Care should be used when the eye is inflamed. On very hard eyes the effect may be nil.

#### Detachment of the Retina.

H. S. McKEOWN (*Archives of Ophthalmology*, January, 1933) describes the operation for retinal detachment practised by Gustav Guist. The main idea is the treatment of a large area of the sclera over the detachment by multiple trephine holes. A long incision is made in the conjunctiva, over the insertion of a rectus muscle, parallel with the limbus. The muscle is divided close to its insertion and a large area of sclera exposed. The trephine holes through the sclera are made and the scleral flaps removed. Through each opening the choroid

is treated with potassium hydroxide in a solid pencil. The point is applied for two or three seconds and the spot neutralized with 5% acetic acid and washed with salt solution. The choroid is then perforated by a blunt puncture dilator, thereby allowing the subretinal fluid to escape. The wound is closed. In the illustration there are seventeen trephine holes. In the discussion that followed the reading of the paper it was pointed out that the use of Green's electrical trephine shortened the operation. The author reports twelve cases with six cures, three improvements, and three failures.

#### Hypopyon Ulcer.

A. C. REID (*British Journal of Ophthalmology*, March, 1933) has come to the conclusion that the best method of treating all hypopyon ulcers at any stage is by one or more applications of a cautery of the Wessely type. The pattern in use has a thermometer attached, registering the exact temperature at the point. A temperature of 70° C. is said to be fatal to the pneumococcus. From 75° to 85° C. is the optimum. The author has abandoned the red-hot cautery, as it causes too dense a scar and leads to perforation, possibly owing to the deep penetration of the red and infrared rays. Carbolic acid has proved inadequate and wastes valuable time. Corneal section is not often necessary; it is reserved for the worst cases. The author gives some details of a series of one hundred cases.

#### Muscle Recession.

W. C. MOTT (*Archives of Ophthalmology*, December, 1932) fixes the retracted tendon after tenotomy by sutures through the tendon stump and Tenon's capsule. An opening in the conjunctiva, 1.5 centimetres in length, is made at right angles to the tendon, over the approximate point to which the muscle is to be recessed. The conjunctiva is undermined in both directions. A hole is made in Tenon's capsule and the hook inserted and brought out on the opposite side through a similar opening. The sheath is then separated from the tendon border on either side. A second strabismus hook is inserted and slid forwards. Prince's forceps are now inserted and clamped five millimetres from the place of insertion, the hooks are removed and the tendon is cut, leaving a one millimetre stump. A "number five" twisted silk suture, doubly armed, is passed through the central area of the posterior conjunctival lip, 1.5 millimetres from the edge and from the outside, then through the junction of the outer and middle thirds of the muscle and one millimetre from its free end. The muscle is spread out to facilitate this. The other needle is similarly passed below, leaving a loop on the outer conjunctival surface. The sutures are completed by passing through the conjunctiva lying immediately over the tendon stump. If an advancement is

to be done on the opposing muscle, it is advisable to do it at this stage before completing the recession. The under surface of the tendon and muscle, and also the sclera, is gently curetted. Then the suture is tightened until the end of the tendon reaches the point of estimated fixation. Two wing sutures are now inserted. One is introduced from without through the posterior conjunctival flap opposite the muscle border; it passes through tendon and Tenon's capsule beneath it and the anterior conjunctival lip. The second suture is passed below. Tying them also closes the conjunctival incision. Sutures remain in for ten to fourteen days.

### OTO-RHINO-LARYNGOLOGY.

#### Diphtheria and Mastoid Disease.

R. GRAHAM BROWN (*The Journal of Laryngology and Otology*, October, 1932) draws attention to the fact that in Queensland affections of the nose and throat are more frequently met with than in Great Britain, and that the removal of tonsils and adenoids from children is called for in a great number of cases. The effect of the presence of tonsils and adenoids upon the frequency of diphtheria carriers and upon the incidence of mastoid disease is discussed. He concludes that diphtheria is rarely found in children from whom the tonsils have been completely removed, and tonsillectomy causes the diphtheria bacilli to disappear from the throats of carriers in about ten days. The diminution of otitis media and mastoid disease observed during the last two years is attributed to the greater frequency of operation upon the tonsils and adenoids during childhood. The author is convinced that many instances of the group of bad results following tonsil and adenoid operations can be accounted for by the association of nasal obstruction and accessory sinus disease with the disease of the tonsils and adenoids.

#### Malignant Disease of the Larynx and Pharynx.

R. STEWART-HARRISON (*The Journal of Laryngology and Otology*, November, 1932) in a paper dealing with malignant disease of the pharynx and larynx, gives the methods and results of protracted, fractional X ray treatment established by Coutard and practised at Zürich since 1929 under the leadership of Schinz. The boundaries of the area under discussion are fixed by the roof of the epipharynx, by the choanae and anterior pillars of the fauces, by the posterior wall of the pharynx, by the glottis and the mouth of the oesophagus. The biological effect of short wave radiation is purely cytotoxic; the extent of the effect varies directly with the sensitivity of the cell, which varies from tissue to tissue. Cancer cells are sensitive. Very

slightly less sensitive are the cells of the epithelium from which the cancer springs, while the essential tissues (in particular the subepithelial blood vessels) are usually somewhat more resistant. The fields are chosen to include the primary tumour and the area of regional metastases. For all tumours two lateral fields are employed, and for tumours of the hypopharynx and larynx, often three. When no contraindication is present the patient is irradiated daily on the side of the lesion. On five days of the week one of the other fields is treated in addition. No treatment is given on Sunday. The treatment usually requires about three weeks for its completion. About the third day some patients may experience a feeling of malaise, with loss of appetite—symptoms that are amenable to treatment and disappear during the following days. About the same time the "early reaction" that is sometimes met with may appear. The cancer tissue and the surrounding mucous membrane become slightly oedematous; the metastases may increase slightly in size, or hitherto impalpable metastases may become evident. Subjectively these signs may be accompanied by radiating pains in the neck. The early reaction is of little importance and only infrequently compels a modification of treatment, in the sense of dose reduction or omission, for tumours of the hypopharynx or larynx, which, aided by oedema, might cause an absolute stenosis. Should the irradiation be continued according to plan, there will appear, usually between the twelfth and fourteenth days, the first objective sign of the reaction of the mucous membranes ("mucous reaction", "radioepithelialitis"). The mucous membrane will appear red and lose its sheen. This is accompanied, or occasionally preceded, by a continually increasing pain in the throat and difficulty in swallowing. Both before and during this period a decrease in the size of the tumour may be observed; its surface becomes necrotic; it and the immediate neighbourhood become covered with a yellow-grey membrane. Shortly afterwards, very delicate, yellowish-white membranes of the fibrinous type stipple the mucous membranes that lie in the path of radiation. They are usually, but not invariably, first to be observed on the soft palate. The treatment must be continued, and the membranes extend; still quite delicate, they run together and form a continuous sheet, which gradually becomes thicker, more yellow-grey and necrotic. The tip of the epiglottis is usually the last structure to react. The epithelium of the mucous membrane is destroyed. This is the only criterion of a sufficient dose. It is exceedingly important; except in the case of very sensitive tumours it must always be obtained, and the margin of safety is small. The appearances are almost alarming, and the subjective difficulties of the patient are great; he must be reassured that it will heal almost without or entirely without

trace. Beyond this point the irradiation may not be pushed; if it were, the subepithelial tissues would be damaged and healing would not occur. But the absolute necessity of carrying the irradiation to the stage of a severe reaction must be emphasized. Earlier failures in favourable cases were almost without exception due to insufficient dosage. In spite of cessation of irradiation, the confluent mucous membrane reaction makes further progress during the next day or two; at least the symptoms become more severe. After this latent period has passed, healing sets in; the necrotic membranes have a sharp boundary with a basal inflammatory reaction of the surrounding healthy mucous membrane. Islets of healthy epithelium appear and the necrotic debris is shed. After a period of six to ten days from the cessation of treatment the mucous membrane shows little trace of the trial that it has undergone. In two weeks the mucous membrane shows but the slightest difference from the normal. In the skin are changes exactly comparable in principle with those of the mucous membrane. During the reactions in favourable cases the tumour undergoes necrosis, and at their conclusion is usually no longer to be seen. Sometimes its disappearance can be followed; in others, examination with the laryngeal mirror offers difficulties owing to the subjective symptoms of the patient and the necrotic material that covers the parts. In these cases the examination must be limited to that necessary for judging the state of reaction. The metastases, if any, will also tend to be resorbed towards the end of treatment; but the change is slow, and their disappearance may be delayed for as long as two months. The fact that a patient has been once submitted to protracted, fractional radiation does not preclude any particular method of further treatment. Surgery, with the knife or diathermy, the application of radium, or a repetition of X ray treatment is possible and has been practised. The conclusion is reached that the protracted, fractional method of X ray treatment is the treatment of choice in tumours of the epipharynx, mesopharynx and hypopharynx. In the treatment of cancer of the larynx it should always be taken into consideration.

#### Primary Submucous Laryngeal Abscesses.

JOHN D. KERNAN AND HENRY P. SCHUGT (*Archives of Otolaryngology*, January, 1933), in a general survey of primary laryngeal abscesses, give the pathology, symptomatology and treatment. They conclude that the rarest kind of laryngeal abscess is an abscess in the mucosa of the thyroid cartilage extending into the pyriform fossa. Such cases do not respond to simple incisions into the bulging mass in the pyriform fossa. A method is described for approaching these abscesses via a window resection of the thyroid cartilage.

## Special Articles on Treatment.

(Contributed by Request.)

### IX.

#### THE TREATMENT OF DYSMENORRHOEA.

The gynaecologist, no less than the general practitioner, faces a problem in dealing with some types of dysmenorrhoea. Just because disturbed menstruation, with its extremes of pain and disability, is a symptom complex with more than one underlying factor, the pinning down of the dysfunction to the actual cause is often a difficult task. But that is what has to be attempted, unless one is going to treat the recurrent dysmenorrhoea of a young girl, for example, as a habit to be overcome periodically by some sedative and antispasmodic, something which, if it does not actually effect a eumenorrhoea, at least affords relief.

Broadly stated, the causative factors of dysmenorrhoea will be found in one or other of the following groups: (i) abnormal conditions of uterus and appendages; (ii) pathological systemic conditions (faulty metabolism, lack of endocrine balance); and since marriage and child-bearing have their pathological sequences, the dysmenorrhoea of the virgin necessarily has certain differences from that of the married or the parous woman.

For the bearing of this on treatment the reader is referred to the brief outline of diagnosis from the aetiological standpoint in the journal of July 26, 1930.

A wide study of abnormal menstruation has led me to the following conclusions:

1. Dysmenorrhoea, from whatever cause, is more common among the unmarried than the married, and more common among nulliparous than parous women.
2. The surgical treatment of the virgin has a relatively small field as compared with the non-surgical.
3. The prognosis, with appropriate treatment, is in the large majority of cases favourable.

The actual causation of the various forms of pain (spasmodic, colicky, labour-like *et cetera*), of the part played by stenosis of the cervical canal, by the inadequate musculature of a poorly developed uterus in relation to contractility, and by the character of the products of menstruation, are matters of speculation. But since normal function is dependent upon normal morphology of the organ involved, abnormalities of the uterus itself—hypoplasia, acute flexions, especially anteversion, with marked angulation of the canal—must, in the absence of rebutting evidence, be accepted as being mechanical and obstructive factors in the product of much painful menstruation.

The developmental changes in a girl's mentality that arise with puberty, her altered psychology, with its introspections and inhibitions, may for the time being have an unfavourable influence on her menstruation. One type of girl will take the situation very badly, consciously or unconsciously exaggerating the pain and the other symptoms. The interpretation of the subjectivity is part of the problem.

Another point to be borne in mind is that, while the first few menstrual periods may be very painful or otherwise disturbing (especially when menstruation begins very early, before the uterus is well developed), the succeeding periods may be better tolerated and gradually become painless. Experience of this kind is the commonplace of practice. It is the justification of conservative treatment (from the surgical standpoint) in the virgin, without prejudicing the use of general measures.

#### The Dysmenorrhoea of the Virgin.

No counsel of perfection can be offered as to treatment of dysmenorrhoea of the virgin. Each case has to be investigated. Many will respond to treatment on general lines, the dysfunction being often an expression of malnutrition. And because pain is, among other things, "the cry of a nerve for healthy blood", perverted blood chemistry from whatever cause—anaemia and toxic conditions

generally—disturbs that deeply sensitive mechanism of the young girl, the neuromuscular.

Hence the correction of faulty hygiene and the direction of the nutrition, exercise, study and habits generally of the patient are an essential part of the treatment.

In every case regard has to be paid to the nature and locality of the pain, its degree of severity and duration, the amount of the flow, the vocation of the subject, her psychology and surroundings. The neurotic and imaginative should be enjoined to take the line of greatest resistance. The same appeal does not apply to the girl of healthy mind and normal body, who suffers acutely from pain—cramping, colicky, bearing-down, the passage of clots, vomiting, headaches. In the former type it may not be necessary to proscribe her baths and daily occupation; in the latter, absolute rest is imperative during the acute stage. In all cases warm baths at bedtime for a few nights before the expected period are advisable. A hot bath at the beginning of the flow may be helpful. Constipation should be effectively dealt with; a loaded bowel increases the dysmenorrhoea.

For the actual relief of pain of the milder type and nervous disturbances the bromides are most satisfactory; 0.3 gramme (five grains) each of sodium bromide and potassium bromide may be given three times a day and oftener, and in increased doses if necessary. With headache and neuralgic pains the combination of aspirin, phenacetin and caffeine is helpful. For the severer forms of pain referred to the uterus, the ovarian, lumbar or sacral regions, the bearing-down, labour-like pains, there is a temptation to use morphine or hyoscine for quick relief. The objections are obvious.

Among drugs which give relief are veramon (0.18 to 0.6 gramme or six to ten grains) at four to six hour intervals; belladonna, tincture, 0.3 mil (five minims), especially in pain of a spasmodic or colicky nature. When menorrhagia is associated with dysmenorrhoea, cotarine hydrochloride will be found very helpful. None of these can be called specific, but in most cases will give relief. Drugs should be discontinued with the passing of pain and nervous symptoms. Even the aspirin habit has to be safeguarded. Hot water bags to the lower part of the abdomen and vulva mitigate pain and promote menstrual discharge.

The maintenance of body warmth is essential. With many girls there is a vasomotor disturbance with a sub-normal temperature at menstrual periods. If relief follows one or two days of rest, the girl should be encouraged to resume her ordinary occupation. Girls of the leisure class are more prone to take the trouble "lying down" (in a double sense) than those of the artisan class, the rank and file of workers. One has to steer a wise course in discriminating between real suffering and its semblance.

The use of alcohol in these cases is, for obvious reasons, contraindicated; appetite grows with what it drinks upon. The remark applies, among other things, to the time-honoured solace of the initiated—gin—in the long run a disservice. Of late years its richer relative, the cocktail, has become a popular therapeutic with some at menstrual (and intermenstrual) periods.

Treatment, so far as it has been here outlined, has dealt only with the relief of pain and the improvement of the health on general lines. With the amelioration of symptoms, examination (in the case of the virgin) may be postponed. Common sense must decide. An enlarged cystic ovary, an ovarian dermoid, an irritable appendix, tuberculous tubes, may, as they often do, persist undetected if the policy of *laissez faire* is carried too far. All examinations should be made under an anaesthetic. A rectal examination may suffice; if the result is unsatisfactory, a vaginal one, gently made, is in the best interests of the patient. The speculum is rarely needed. Carefully and unobtrusively made, the examination should cause no trauma to direct the girl's attention to the part. And, except in special cases, it is not necessary that she should be told. Here again individual judgement must meet the situation.

Excluding gross pathological complications (ovarian and parovarian cysts, uterine and other neoplasms), the examination may reveal displacements of a normally-sized uterus, uterine hypoplasia, with or without flexions, espec-

ally the undersized, acutely anteverted uterus, with conical cervix and pin-hole os. The ovaries may not be palpable. Assuming that there is a causal connexion of dysmenorrhœa with the undersized uterus, lacking normal contractility for the expulsion of its contents through a stenosed canal, often extremely angulated, the problem resolves itself into (i) stimulating the arrested development and (ii) correction of the stenosis and the angulation.

Briefly stated, normal uterine development and function are dependent mainly on normal ovarian activity. The control of menstruation is a measure of the ovarian secretions, and while anterior pituitary and thyroid activity enter into the picture (to what extent is uncertain), stimulation of ovarian secretion is of primary importance. If general malnutrition alone were the cause of arrested development of the ovary and, in consequence, of the uterus, the matter would be simple. But one meets with imperfectly developed ovaries and undersized uterus in many healthy, active, well nourished girls who suffer from dysmenorrhœa, oligomenorrhœa and menorrhagia.

Before endocrine therapy found a rational application, the treatment of dysmenorrhœa, unconnected with gross lesions, was on general lines, with a choice of drugs for the relief of symptoms, and the use of certain surgical measures (in the case of the virgin, it has to be admitted, haphazard). Nor will anyone with wide experience admit that the element of empiricism in treatment is completely removed.

While, therefore, the restoration of the endocrine balance is to be sought in measures which improve the health generally, we have in "Agomensin" and "Sistomensin" two stimulants of ovarian activity which may well be tried in cases of dysmenorrhœa and uterine hypoplasia—the former where the menstrual discharge is scanty, the latter where it is excessive. It will be found best to give one tablet three times a day for a few days before the expected period, and two tablets thrice daily while the period lasts. Intramuscular injections may be substituted. Treatment must be spread over several periods. There can be no doubt about the beneficial stimulating effects of these "gland products" in many cases. They may, if necessary, be supplemented with a simple surgical procedure, to be mentioned later.

Recently the ovarian hormone "Theelol" has been introduced (Parke, Davis and Company), for which is claimed an oestrogenic activity similar to that of theelin. Evidence is not wanting as to its influence on the growth of an undersized uterus. I have no personal experience.

In a large number of cases of ovarian and uterine hypoplasia, hypopituitarism, hyperthyroidism and hypothyroidism are present. In the last-mentioned condition, where it is well defined, I have found small doses of thyroid extract (0.006 to 0.003 gramme or one-tenth to one-fifth of a grain three times a day) of great benefit, not only in the relief of menstrual and intermenstrual pain, but in the effect on the general well-being. Given with calcium lactate (0.6 gramme or ten grains three times a day), or with "Tricalcine", it has been effective in dysmenorrhœa with excessive blood flow, where other measures have failed. "Hormotone", combining ovarian and anterior pituitary hormones, has much to recommend it. The use of most pluriglandular combinations is like drawing a bow at a venture, but "Hormotone", given in cases of long standing, painful oligomenorrhœa, has in my experience produced some excellent results. It must, however, be continued over a long period (three or four months), and unfortunately it is very expensive.

#### Dysmenorrhœa in the Parous and Nulliparous.

The management of the dysmenorrhœa of the nulliparous woman is on similar lines to that of the virgin when similar conditions exist. Though marriage may cure some patients, and child-birth many more, a certain proportion of nulliparous women suffer an increased dysmenorrhœa. The glandular endometritis of the young married woman (a much more real and diagnosable condition than the so-called endometritis of the virgin) and endocervicitis, with a true cervical leucorrhœa, are, in the large percentage of cases, the result of infection. Here we have something more than the recurrent periodic pelvic

hyperœmia; and ovaries and tubes may be involved. When there is no infective process and the hypoplasia persists, conservative treatment, as in virginal dysmenorrhœa, should be tried.

Why marriage and child-birth do, in the majority of cases, "cure" the dysmenorrhœa of the previously unmarried is a matter of speculation. It seems reasonable to find the explanation partly in the improvement of the morphology of the uterus (musculature and canal) and partly in the better functioning of the nervous system.

#### Surgical Treatment.

Excluding the accepted surgery of gross lesions in the married and unmarried, we enter on debatable ground. The question is, can anything be done for the hypoplastic or acutely anteverted uterus, apart from general and endocrine therapy?

Writing from a personal practical experience, the answer is that in the majority of carefully chosen cases the uterus will respond favourably to simple measures.

Mention has been made of "haphazard" surgery. In this category is the routine curettage of a virgin uterus. The congested, swollen endometrium and subendometrial glandular layer of the uterus are the physiological reflection of the general pelvic hyperœmia of the menstrual "tide". The condition is far removed from a true endometritis, rare in the uninfected virgin uterus. With the completion of the menstrual cycle, the vasculature of the endometrium and subendometrium has returned to normal, pain and tenderness over the uterus and ovarian regions have gone. A recurrent monthly endometritis does not fit in with the evidence or the physiological scheme, and a chronic endometritis is excluded. That a true inflammatory condition, both of endometrium and the utricular glands, may occasionally occur is not deniable, but investigation will reveal some infection. The leucorrhœas, when they are not vaginal, are fear the most part cervical. In sixty cases of more or less severe dysmenorrhœa associated with uncomplicated undersized uterus, only twelve patients had "whites" or discharge of any kind.

I have long abandoned curettage of the virgin uterus, because (i) in very few cases was the condition relieved, and it was occasionally aggravated; (ii) scar tissue resulted. Vigorous scraping of the small area of the lining membrane and the underlying stroma, so far from stimulating a "fresh, healthy nutrition", may easily destroy the power of renewal. Sterility may result. *Esperito crede!*

#### The Retroverted Uterus.

Examination often reveals a small, freely movable retroposed organ of which the young woman is unaware. If associated with any degree of dysmenorrhœa, it is the hypoplasia rather than the malposition which calls for treatment. (The heavy retroflexed uterus resulting from child-birth, subinvolution with endometritis from sepsis, often anchored by adhesions, is in another category. The appendages are often involved. Pelvic surgery is indicated.)

Pessary treatment is very unsatisfactory, the small uterus tending to fall back again. Nor has the Alexander-Adams shortening of the round ligaments any application here. It will not cure the angulation of a retroflexed uterus and the conditions that call for the treatment of a heavy retroflexed uterus are, as mentioned above, those demanding abdominal section. At best it takes much for granted.

Pelvic sympathectomy for dysmenorrhœa has found some supporters. It is hardly likely to replace other forms of treatment.

#### Acute Anteversion of the Uterus.

Acute anteversion of the uterus, with a greater or less degree of hypoplasia, an angulated canal, and pin-hole os, is, as has been pointed out, associated with a large proportion of cases of dysmenorrhœa in the virgin. Simple dilatation of the canal, though giving temporary relief, fails for the reasons (I believe) that: (i) the angulation is not corrected, (ii) the inner os contracts down again after a comparatively short period.

To meet my own unsatisfactory results by this method, I devised, more than twenty years ago, a flexible hollow stem of silver-plated copper wire—a modification of Duke's stem, of two sizes, one and three-quarters and two and a quarter inches, to suit a varying length of the canal, with a lumen of three-sixteenths of an inch, ample provision for the free exit of any uterine discharge.

Under an anæsthetic, after dilatation, without curettage, the stem is inserted and fixed with a couple of catgut sutures through the lip of the cervix and one of the small holes in the base of the stem. The patient remains in bed for a few days. The stem is worn for a variable time, in some cases for several menstrual periods. Carefully carried out, in well-selected cases, it is a safe and, in my opinion, a rational procedure. Elsewhere will be found the contraindications, safeguards and the meeting of theoretical objections. The best results have been in the treatment of nulliparous subjects. The normal curvature of the canal has been restored in cases of marked flexions; long-standing dysmenorrhœa has been relieved or abolished and long-delayed pregnancy has followed. One has to admit failures. With enlarged experience, modified views and a restricted application have been inevitable.

That it does stimulate uterine muscular action and improve tone has been proved. In some cases the favourable results have been dramatic. It cannot in the nature of things replace the biological factor; a scientific endocrine therapy offers the greatest promise. As an adjunct to that therapy, I am convinced of its value.

#### Summary.

1. Dysmenorrhœa is the product of more than one factor. Every case calls for a thorough investigation.

2. Treatment on general principles, with the addition of endocrine therapy, gives the best results in the majority of cases.

3. Prolonged treatment is generally necessary.

4. Conservative measures in the treatment of the young unmarried girl should be a principle. The field for surgery is a restricted one.

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## British Medical Association News.

### SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION, IN CONJUNCTION WITH THE EAR, NOSE AND THROAT SECTION, was held in the Medical Society Hall, East Melbourne, on March 1, 1933, Dr. W. G. D. UPJOHN, the President, in the chair.

#### Nasal Sinusitis and General Medicine.

DR. CLIVE EADIE read a paper entitled: "Nasal Sinusitis in Relation to General Medicine" (see page 637). The paper was illustrated by lantern slides.

DR. SYDNEY PERN said that eight years before he had published a paper pointing out the frequency of sinus infection and its importance in relation to general disease. His paper had not been very well received at that time. Dr. Eadie's work was an indication of the advance which this branch of medicine had made in the meantime. Dr. Pern was of the opinion that tubercle bacilli might multiply in an infected sinus and give rise to tuberculous cervical adenitis by absorption through the tissues without necessarily causing demonstrable tuberculous disease of the affected sinuses. Sinus infection was on a par with

pyorrhœa and infected tonsils, as it was only another portal of entry for the same organisms, but its position brought about infections which might lead to cerebral disease by direct extension, as shown by Dr. Eadie. It was responsible for most of the lung troubles outside tuberculosis and was liable to aggravate this condition when present. In diseases such as *encephalitis lethargica*, anterior poliomyelitis, and *paralysis agitans*, it was probable that the causative organisms multiplied in the sinuses and from there gained access to the cerebral tissues. Vaccine treatment in chronic sinus disease had proved almost useless. Some years ago Dr. Pern had advocated the use of "Colloidal Manganese" by injection as very useful in sinus infection, and he still considered it very useful. Ionization had come into use and good results had been obtained in local sinus infections. Dr. Pern had been in communication with a worker in America who, by means of a long tube, had attained culture of virulent streptococci from the cœcum and had replaced them by implanting colonies of acidophilus bacillus with good results in cases of arthritis, pyelitis, gall-bladder troubles and even sinusitis.

DR. F. W. GREEN said that he had given 1,512 anæsthetics for Dr. Eadie during the past few years, 707 for septic tonsils, 437 for operations on the antra, 143 for submucous resection of the nasal septum, 63 for operations on the mastoid, and 162 for miscellaneous cases. The method of anæsthesia in all these cases was by intratracheal administration of warmed ether vapour following on induction with ethyl chloride on an open mask. In none of these cases did bronchial pneumonia or other post-anæsthetic pulmonary complication occur. Dr. Green paid a tribute to Dr. Eadie's remarkable work in carrying out the *post mortem* examinations in 130 cases in order to ascertain the condition of the nasal sinuses. In each case Dr. Eadie had removed the calvarium and the brain. He next chiselled off the roof of the ethmoidal sinuses and lifted out the pituitary gland, uncapped the sphenoids and exposed the frontal sinuses by removing their posterior walls. These were examined by frontal mirror and artificial light. The maxillary antra were exposed by lifting the lip and performing the usual preliminary stages of a radical antrum operation, removing the anterior wall and examining the interior with frontal mirror. Dr. Green felt that in his paper Dr. Eadie had failed to indicate the large amount of time and effort spent in carrying out this valuable piece of research.

DR. JOHN H. SHAW said that the Branch owed much to Dr. Eadie for his interesting paper. Dr. Shaw found several points of especial interest. Dr. Eadie had stated that on examining *post mortem* bodies of persons who had died from lobar pneumonia, 100% showed evidence of sinusitis. In patients dying from bronchopneumonia, however, only 85% showed *post mortem* evidence of sinusitis. If these figures were correct, then no patient with pneumonia should ever be allowed to leave hospital until it was certain that no sinusitis existed. Dr. Shaw asked the extent of the sinusitis discovered in these cases. As Dr. Pern had said, it was a very difficult problem to deal with the chronic cases of pansinusitis. Radical treatment of the antra and ethmoids sometimes led to good results and general improvement in the sinus condition within a month or two. In other cases the results were less satisfactory. It was necessary in some instances to insist on the patient living a very sheltered life, protected as far as possible from exposure to cold and respiratory infections; these patients required as much care those suspected of suffering from early pulmonary tuberculosis. This precaution was necessary for as long as eighteen months in some instances, and when it involved the patient giving up his usual vocation it might be a very costly procedure, and in some cases quite out of the question. In Dr. Shaw's opinion, it was, from the point of view of a focus of infection, even more difficult to control chronic infection in the lungs in the form of a low-grade bronchiectasis resulting, originally, from infected sinuses. In these cases there was usually no adequate emptying of the reservoir of infected material, and long and patient treatment was required to effect improvement. The maxillary antra, Dr. Shaw continued,

were, of course, vestigial structures, and represented spaces originally filled by olfactory turbinates, and, like the appendix, they constituted the price man had to pay for his ascent in the biological tree.

DR. D. M. EMBELTON expressed appreciation of Dr. Eadie's paper. Concerning the treatment of sinusitis, Dr. Embelton said it seemed that the purpose of treatment centred round the conceptions of the stasis which occurred and of the necessity for drainage. In children particularly it was important to consider prevention in the early months and years of life by treatment of abnormal adenoids before the nasal obstruction had led to a permanent deformity of the nasal airway with relative obstruction and consequent stasis in the nasal cavities. If this precaution were taken effectively, much of the sinusitis appearing in later years would be obviated. In many instances, Dr. Embelton continued, chronic ill health could be traced to the effects of absorption of toxic substances from infected sinuses. He quoted a case of a patient of his own, a woman, who was suffering from severe anaemia, failing vision and extensive infective arthritis over a period of years. Following an operation for the radical treatment of her infected sinuses, her general condition improved, and after some months her anaemia disappeared, her arthritis was cured and her vision returned practically to normal. In children, however, Dr. Embelton considered it was wise to avoid radical operations on the sinuses unless absolutely necessary.

DR. J. M. BAXTER congratulated Dr. Eadie on his valuable paper, but said that he would like to have heard a fuller discussion of the difficulties in diagnosis of the mild sinus conditions. In Dr. Baxter's opinion it was sometimes difficult to make a certain decision, even with all the modern methods of investigation available. He asked whether there was any course of treatment other than surgical which offered much hope of improving chronic sinus infection. He had used vaccines, "Colloidal Manganese" injections *et cetera* without good results. The series of 1,500 odd cases of intratracheal anaesthesia without pulmonary complications, quoted by Dr. Green, was a matter for congratulation; but in his own experience, Dr. Baxter said, covering several thousand anaesthetics for operations on the nose and throat in private and general hospital practice, he could not recall more than two cases in which bronchopneumonia had developed as a sequel of the anaesthesia. Records of private cases only were available. These operations had been performed under various types of anaesthesia, some intratracheal, but mostly other methods, and of the two cases of bronchopneumonia, one followed an intratracheally given anaesthetic. While not condemning intratracheal anaesthesia in any way, he thought that ether given intrapharyngeally, particularly in tonsil cases, had an advantage over the intratracheal method. He thought that lung complications following anaesthesia by other than the intratracheal method were much exaggerated.

DR. E. G. DERMER expressed his appreciation of Dr. Eadie's paper, and particularly of his investigation into the incidence of sinus infection as shown at *post mortem* examination. In carrying out these investigations Dr. Eadie had used the method of exploratory suction of the various cavities, as advocated and practised by Watson-Williams. This technique was very valuable when applied in practice. In a series of from fifty to seventy cases in children who had been referred for the tonsil and adenoid operation, he, Dr. Dermer, had used the method to carry out a routine investigation of the antra. A great proportion revealed unsuspected pus, while many others were shown by bacteriological tests to be infected. Surgical drainage was sufficient in these cases to cure the condition, and so to provide a good airway, a point referred to by a previous speaker. In adults, the posterior sinuses were also easily investigated, and in some cases pus under pressure would well up through the exploring cannula before fluid could be introduced to wash out the infected cavity.

DR. NORMAN EADIE said that he had been interested in two types of patient, particularly those met with in his work at the Tuberculosis Bureau, whose symptoms simu-

lated pulmonary tuberculosis. A remarkable proportion of these were found to be suffering from a low grade sinus infection. The other type of case was seen at the Infectious Diseases Hospital, where throat or nose swabs remained positive for diphtheria bacilli, even after infected tonsils had been removed. Washing out and, if necessary, draining infected sinuses in these cases almost invariably benefited the general health of the children and cleared up the diphtheria infection. With regard to the chronic infection of sinuses in adults, he preferred in many cases to continue antral lavage, even for many months, rather than to perform any radical operation. In some cases it was difficult to decide whether radical surgical operation was justified, without numerous preliminary irrigations.

DR. CHARLES SUTHERLAND expressed his thanks for a most instructive paper. He had found that in some asthmatic subjects dramatic relief from symptoms followed antral lavage. Relief in such cases might be obtained in a few hours after months of asthma. He was particularly interested in the points raised by Dr. Baxter regarding the treatment of chronic "sniffy" noses and recurring colds. Dr. Sutherland considered that many of these cases were definitely allergic, and in deciding this point two important criteria should be considered: first, did the symptoms vary with the seasons; and secondly, did they vary in intensity with changes in locality? If there was marked seasonal variation, hypersensitivity to pollens was almost invariably found. When symptoms varied with locality, sensitivity to substances such as house dust, kapok, feathers *et cetera* was often detected.

One other test served to distinguish these patients with allergic symptoms from those subject to infection. In the former mucus swabbed from the nose showed eosinophile cells predominating; in the latter, neutrophile polymorphonuclear cells predominated. Most empirical forms of therapy, such as intravenously administered calcium chloride or manganese given subcutaneously, seemed to afford only temporary relief, whereas, if the external exciting cause could be identified and avoided, marked improvement resulted. If it were impossible to avoid the excitant, specific desensitization usually produced excellent results.

DR. KEITH HALLAM congratulated Dr. Eadie on one of the most "meaty" contributions he had heard for a long time. In Dr. Hallam's own opinion the patient coming for investigation with symptoms simulating pulmonary tuberculosis, but who was found on investigation to be suffering from sinus and complicating bronchial infection, was very common, so common that his condition had come to be known colloquially as the "upper respiratory chest". He had seen this type of patient particularly at the Tuberculosis Bureau, and the X ray appearance showed increased vascular engorgement in the hilar region, increased gland shadows in the mediastinum, with general decreased translucency on both sides of the chest. On further investigation these patients almost invariably showed definite signs of sinus involvement and eventually proved to be not tuberculous. In Dr. Hallam's opinion it would be difficult to over-estimate the value of radiological investigation of the sinuses in this type of case.

DR. HUGH MITCHELL said that, unfortunately, medical men appeared to be divided into two schools in their attitude towards sinus infection—believers and others. Snyder, in his general medical clinic, had a routine radiological investigation of sinuses carried out in 386 consecutive cases of arthritis. Among these 33 patients showed and were clinically proved to be suffering from sinusitis. Of the 93, 51 agreed to and received surgical treatment of their sinuses and "showed, with few exceptions, a most favourable response to rhinological treatment of the diseased sinuses".

If Dr. Eadie's paper had done nothing more than to gain a few converts to the school of believers in the seriousness of sinus infection, even then he had done something great for medicine in Victoria.

DR. EADIE, in reply to Dr. Fern's suggestion that tonsils might be the cause of sinus infection, said that in his own opinion the reverse process would be more likely to occur.

In answer to Dr. Shaw's inquiry, Dr. Eadie said that in nearly every case of sinus infection in relation to pneu-

monia, *post mortem* he had found anterior sinus infection; in a few there was also posterior ethmoid and sphenoid sinusitis. The condition was usually an acute suppurative exacerbation of a chronic infection. He agreed with Dr. Embelton in not advocating radical surgical operations in children, though intranasal anastomy was a great help in draining infected sinuses in older children. He considered, with Dr. Dermer, that suction exploration of suspected sinuses in children was of great value, but most of his own patients had been adults. Some workers left in the antrum a weak solution of biniodide of mercury, with the view of disinfecting the cavity, and other antiseptic solutions had been tried.

Patients with symptoms suggestive of early tuberculosis, in his experience, usually were found to have fairly well established infection of nasal sinuses.

In answer to Dr. Baxter's question regarding diagnosis, Dr. Eadie said he thought suction exploration was a help in both diagnosis and treatment. With regard to the method of anaesthesia in operations on the nose and throat, Dr. Eadie preferred intratracheal anaesthesia on theoretical grounds and also as a matter of practical experience of various methods.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at Broughton Hall, Sydney, on April 20, 1933. The meeting took the form of a series of clinical demonstrations. (The first part of this report was published in the issue of May 20, 1933.)

#### Hysteria.

A single woman, aged thirty-nine years, was shown. The patient's father drank to excess, neglected his family, and died of Bright's disease at the age of forty-four; a paternal uncle was also a drunkard, and a paternal first cousin committed suicide. The mother died at the age of forty-two, when the patient was eight years old.

The patient was looked after for a year by an aunt, and was then sent to an orphanage, where she remained until she was thirteen years old; she then started work as a domestic. She worked continually as a domestic and laundress until the age of thirty-four years. At the age of twenty-eight years she became engaged to a widower with three children; but she broke off the engagement because she did not think she could do justice to the children. Her social adjustment appeared to be good; she had plenty of friends and joined in parties and amusements. As a child she was nervous and afraid of the dark, and would scream and tremble if upset. When thirty-four years old she was found in a state which suggested she had had a hysterical fugue; she had apparently wandered from home and taken "Lysol". She had no recollection of the events of the episode. Prior to this she had been "nervy" and sleepless. After leaving hospital she had hysterical paresis of the lower extremities.

For two years before admission she had been working as a machinist in a laundry. Twelve months before admission she became sleepless and depressed. One morning she went for a walk, and had no recollection of succeeding events until she found herself in a police cell at 6 p.m. It appeared that she was passing a group of children in the street, when she grasped a child, aged eighteen months, by the throat. When the child's mother attempted to rescue the child, the patient claimed it as hers. The mother had to drag the child from the patient; it was then black in the face. Three months after this incident the patient developed a right hemiparesis which was apparently hysterical in nature.

At the time of admission the patient was depressed and emotional. She manifested amnesia of a lacunar type, covering the episodes of her attempted suicide five years previously and the more recent homicidal attack. Some hysterical paresis on the right side remained; the gait was unsteady.

After admission the patient was emotionally unstable, but gradually improved, and, by the time of the meeting, had lost the hysterical paresis.

The next patient suffering from hysteria was a married woman, aged twenty-nine years. She had no children. She was admitted four weeks before the meeting, when

she was abstracted and inhibited; her attention was difficult to obtain and to hold. She was disoriented as to time and place, and her memory for recent events was faulty. She expressed ideas of a depreciatory and self-accusatory nature. Her mental state was unstable, and she cried frequently without apparent reason. She was restless and got out of bed a good deal, and was careless in regard to her personal habits. Physical examination revealed no abnormality except generalized analgesia.

The previous history indicated that she had manifested no abnormality of conduct until nine months before the meeting. Since then her manner had been peculiar. Her mother died two months before the meeting. Since then the patient had been childish in manner. She repeated nursery rhymes, said she saw angels, and wished to die and see God.

For the first week or two following admission she was restless and, at times, noisy; she was faulty in her habits. She cried frequently, but did not display any very active ideation, and did not respond to questions freely or carry on conversation. She was at times seen to attitudinize. Later she became less emotional and more settled.

It was remarked that the character of this patient's symptoms and the course after admission pointed to the probability that her condition was an hysterical confusional episode, determined probably by the death of her mother. However, the peculiar conduct preceding her mother's death might indicate rather the early stage of development of a schizoid psychosis. It was probable that, while the patient would recover from the attack, she would later relapse, and most likely develop a more definitely schizoid syndrome.

The next patient was a woman, aged twenty-seven years, who had been admitted two months previously. She had an hysterical paresis of the left leg, and complained of sensations of "pins and needles" in the sole of her left foot, of shooting pains in the knee and hip, and feelings of coldness in the limb. Emotionally she was very miserable, and wept freely.

The family history revealed some indications of psychopathy, the paternal grandfather having been cruel and bad-tempered, and a maternal first cousin epileptic. The patient's father was irritable and quick-tempered; her mother had a depression attack when the patient was four months old. The patient did not exhibit any nervous symptoms in childhood, but was backward at school. She worked in a factory for five years, until she was twenty-one years old, when she had an attack of neurasthenia. At this time she had sensations of "pins and needles" and coldness in the left leg, cried a great deal, and complained of pains in the head. She improved after some months, and was able to return to work, but was able to carry on for short periods only. Six months before admission the present condition appeared.

After admission the patient cried a great deal and complained of photophobia. She gradually improved, but was still in a very unstable state.

It was commented that this case illustrated conversion hysteria and a type of reaction met with in persons of poor personality and development, and generally some degree of intellectual inferiority.

The fourth patient suffering from hysteria was a single woman, aged twenty-six years. She was admitted two months before the meeting. She was illegitimate, and, up to the age of three years, was reared in an orphanage. At that age she was adopted by relatives. Her foster mother was now seventy-five years old and her foster father sixty-five. The foster parents had been very kind to the patient. On leaving school at the age of seventeen years the patient worked in a factory for eighteen months, and subsequently at different occupations for short periods. She did not appear to have acquired any settled interest in her work.

Nervous symptoms first appeared eight years before the meeting, when she had what appeared to have been a gastric neurosis. Later she became addicted to "dizzy turns", which would necessitate her being away from work for a day or so. Two years before the meeting she became unable to walk, and was confined to bed for seven months. She ultimately recovered and was well until

ten months before the meeting, when her right leg became stiff and began to tremble. This condition continued, with remissions. Recently she had had "turns", in which she had fallen backwards.

When admitted, this patient had a typical hysterical tremor of the lower extremity. Although superficially cooperating, she made no real attempt to relax the muscles of the affected limb. Her intellectual endowment was well below normal.

The comment was made that there was little doubt that the motive in this case was to exact sympathy and attention from her environment and to evade the necessity for working.

#### Alcoholic Dementia.

The next patient was a woman, aged fifty-three years, suffering from alcoholic dementia. She was of illegitimate birth and knew nothing of her family. Her mother later married unhappily and divorced her husband. She was cared for by a foster parent. She was never allowed to go to work, and was not twenty when she first married. Her husband, who was a divorced man, ten years older than herself, was thoroughly bad; he later took to drink. The patient had two still-born children. She deserted her husband and went to live with another man. They were together for several years before they separated. They could not agree. This man did not drink. He went to the war and was killed. There were two living children, but they did not survive early infancy. The patient married a second time; her husband, a station overseer, was thirty years older than herself. He died shortly after the patient's admission. She and her husband had been drinking for years.

For a few years prior to her admission the patient had been subject to epileptiform seizures, and her memory had become affected. She was blind in the right eye, which, she stated, had been bad for at least twenty years.

She was a well nourished, elderly adult. There was an ocular-motor palsy on the right side. The gait was unsteady; the knee jerks were brisk. The systolic blood pressure was 205 and the diastolic 160 millimetres of mercury.

The patient had no understanding of the state of her illness. She was dull, somewhat foolish, and fatuous. She was very confused, had no idea where she was, and forgot the location of her bed. She did not appear to recognize those about her. She had a gross impairment of memory, more especially for recent events, but would fabricate. She was easily startled, and would scream out if taken unawares. After admission she became quiet and placid and less confused, and was able to recall past events with more clarity. She had one *petit mal* and one major seizure. She still lost her way around the ward, and was slovenly and untidy in her dress.

#### Chorea at the Menarche.

The next patient was a schoolgirl, aged twelve years, suffering from chorea. Her mother had always suffered from "poorness of blood". The father was "highly strung" and inclined to be irritable. The patient was the eldest but one of three children and had been artificially fed. She had scarlet fever when four years old, and her tonsils and adenoids were removed when she was six. She attended the public school and failed in the qualifying certificate examination in September, 1932. She passed in all subjects but arithmetic; she did not seem able to do sums. She was one of the youngest of a class of sixty girls. She had always been rather nervous, was frightened crossing the road, and would never venture out in the dark. She used to cry in her sleep, but was very bright and lively, and learnt dancing, and had ideas of becoming an actress.

She had been quite well until four days before the menarche. Then her mother noticed her shaking and dropping things. She complained of severe pains in the legs, and headache. The movements became worse. The movements ceased when the patient was asleep. She knocked herself about and had bruises on her leg, hip and elbow. She also had a sore inside her mouth, and had difficulty in swallowing. She was very irritable, and had screaming fits, especially if spoken to harshly. She cried

sometimes, and for two days before admission had not been taking her food.

The patient was a rather well developed young girl, although slight in build, and tall. She appeared somewhat anæmic, and had some dilated venules on the cheeks. The apex beat was in the fifth space, 8.75 centimetres (three and a half inches) from the middle line. The heart sounds were accentuated and slightly irregular, with periods of extrasystoles and missed beats; her pulse rate was 80, and her systolic blood pressure was 120 and diastolic 70 millimetres of mercury. The pupils were moderately dilated and active. She had well marked irregular movement; the whole body was affected, but particularly the face, hands and arms. There was some paresis noted in the hand grip; the muscles were flaccid. Owing to incoordination of voluntary movement, the patient was apt to knock herself about. Her speech was hesitant and embarrassed and, when longer sentences were attempted, tended to merge into an incoherent jumble.

#### Premature Senescence.

The last patient was a girl, aged nineteen years, who had become prematurely aged in appearance during the previous eighteen months. This change had commenced at the time of an illegitimate pregnancy, which had terminated in a still-birth twelve months previously. Since then there had also occurred an alteration in her disposition, and she had become moody and irritable, and at times she had thrown things at her mother in her rage. Formerly sociable and bright, she now showed a marked disinclination for company and would sit by herself, staring vacantly in front of her. She began to complain that her mother and other people talked about her trouble, and she refused to go anywhere for this reason. During the year prior to her admission the physical change progressed with some rapidity, and her mother noticed that her face had become sunken and lined and her hair lank and dry. She lost over 6.3 kilograms (one stone) in weight during this period.

Her father worked in a lead mine at Broken Hill, but showed no signs at any time of lead intoxication. He died about two years after her birth from pneumonia. He was below the average in height. Her mother had a period of amnesia for six weeks following pneumonia, but had been well since then. One sister suffered from phthisis, but the other members of the family, nine in number, were healthy.

On admission to hospital the patient was apathetic, listless, disinterested and somewhat abstracted. She showed some inhibition of ideation, but answered questions on being prompted. She denied any delusional or hallucinatory ideas, and there was no impairment of memory.

She was well nourished, short, but well formed. She looked considerably older than she really was, and her face was thin and mature in appearance. There was no other evidence of glandular involvement; her hair was not brittle, eyebrows were normal, the hair distribution was feminine in type, and there were no abnormal deposits of subcutaneous fat. The thyroid gland was not palpable. The skin was moist and smooth on the trunk and limbs. The secondary sex characters were well marked, and the menstrual function was normal. Her blood pressure was low, the systolic reading being 84 and the diastolic 52 millimetres of mercury. There was no punctate basophilia. Other systems were normal.

It was commented that the normal condition of this patient was not inconsistent with an early schizophrenic psychosis; but this left the premature senescence unexplained. There was nothing to suggest pineal involvement, and the facts that her father was a lead worker and that she herself had had a still-born child, in spite of the history of delusions and hallucinations, were not sufficient to indicate that plumbism played any part. Lead poisoning might be hereditary, but it was unlikely that it would reveal its presence at such a late date, although it might be noted that low blood pressures were found in cases of long standing. There was none of the restlessness or delirium which was common to lead encephalopathy in this case, her attitude being rather one of indifference and emotional unresponsiveness.

## University Intelligence.

### THE UNIVERSITY OF SYDNEY.

At a regular monthly meeting of the Senate of the University of Sydney held on Monday, May 1, 1933, the use of the Great Hall was granted to the Nurses' Registration Board for examination purposes on May 9 and 10, and to the Students' Representative Council on May 15 for the ceremony of installing the President of the Council.

It was resolved to accept with grateful thanks from Dr. H. R. Sear and Dr. K. B. Voss a gift of a number of X ray tubes for use in the Department of Physics.

The following appointments were approved: Mr. J. D. Shaw, B.D.S., as Demonstrator in Dentistry; Dr. M. R. Flynn as Honorary Surgical Tutor in the Faculty of Dentistry; Dr. P. D. Braddon, Dr. A. L. Buchanan, Dr. T. J. B. Connelly, Dr. J. H. Cramsie, Dr. C. M. Edwards, Dr. M. R. Flynn, Dr. M. B. Fraser, Dr. R. V. Graham, Dr. G. A. Hardwicke, Dr. V. J. Kiasella, Dr. K. Kirkland, Dr. D. W. Magill, Dr. N. Meacle, Dr. R. A. Money, Dr. F. W. Niesche, Dr. L. R. Oliver, Dr. T. W. Schenk, Dr. R. S. Speight, Dr. R. B. Trindall, Dr. N. R. Wyndham, Dr. J. O'Brien, Dr. J. S. MacMahon, Dr. K. W. Starr, and Dr. K. A. McGarrity as Honorary Demonstrators in Anatomy.

The following Examiners were appointed for the Final Degree Examination in the Faculty of Medicine:

*Medicine:* Professor Lambie, Dr. S. A. Smith.

*Clinical Medicine:* Dr. C. B. Blackburn, Dr. H. Ritchie.

*Surgery:* Professor Dew, Dr. J. C. Storey.

*Clinical Surgery:* Sir John McKelvey, Dr. H. S. Stacy.

*Obstetrics:* Professor Windeyer, Dr. P. L. Hipsley.

*Clinical Obstetrics:* Dr. Constance D'Arcy, Dr. A. J. Gibson, and Dr. H. C. E. Donovan.

*Gynaecology:* Dr. R. L. Davies, Dr. Cedric Bowker.

The following Examiners were appointed for the Dental Board examinations:

*Materia Medica:* Dr. W. R. Morris.

*Orthodontia:* Dr. E. C. Gates.

*Operative Dentistry and Surgery:* Dr. A. J. Arnott.

*Mechanical Dentistry:* Mr. A. B. A. Palmer.

*Pathology and Bacteriology:* Professor Welsh, Dr. A. M. Welsh.

On the recommendation of the Faculty of Dentistry, it was resolved to admit Mr. B. W. Champion, B.D.S., to the degree of Doctor of Dental Science for his thesis entitled "The Mouths of Mental Deficients", which the examiners reported was an original contribution of distinguished merit, adding to the knowledge and understanding of applied dental anatomy in relation to mental deficiency.

On the recommendation of the Faculty of Dentistry, it was resolved to admit Mr. J. H. Wilson, B.D.S., to the degree of Doctor of Dental Science for his thesis entitled "Practical Investigations in Oral Pathology, Showing its Relation to Medicine and Dentistry, with Special Reference to the Disease of the Peridental Tissues", which the examiners reported was an original contribution of distinguished merit, adding to the knowledge and understanding of oral pathology. (Mr. Wilson graduated in 1927 with second class honours.)

## Correspondence.

### PORTRAITS IN THE PUBLIC PRESS.

SIR: I shall be glad if you will publish the enclosed copy of a letter forwarded to the editor of *The Sydney Morning Herald*.

Yours, etc.,

A. W. HOLMES & COURT,  
President.

British Medical Association,  
New South Wales Branch,  
British Medical Association House,  
135, Macquarie Street, Sydney,  
May 11, 1933.

[COPY.]

British Medical Association,  
New South Wales Branch,  
British Medical Association House,  
135, Macquarie Street, Sydney,  
9 May, 1933.

The Editor,  
*The Sydney Morning Herald*,  
Sydney.

Dear Sir,

I wish to protest strongly against the unauthorised publication of my portrait and of my name in *The Sydney Morning Herald* of the 6th inst.

From time to time your attention has been drawn to the fact that the rules of the British Medical Association, New South Wales Branch, do not permit of the publication in the public press of a member's portrait or of any article, the authorship of which is indicated by signature or otherwise.

The appearance, therefore, of a member's portrait or name in the public press is liable to bring the member, particularly if he be a member of the Council of the Association, into contempt and disrepute by his fellow practitioners.

I would, therefore, on behalf of the Council request that you respect the wishes of the members of the Association in this matter.

Faithfully yours,

(sgd.) A. W. Holmes & Court,  
President.

### COAL MINER'S LUNG.

SIR: I have read Dr. Badham's preliminary account of the chemical analysis and pathology of the above-named condition with much interest (*THE MEDICAL JOURNAL OF AUSTRALIA*, April 29, 1933). As he states on page 515: "The basis for compensation should be disability, and as disability may be absent in individuals with well marked radiographic fibrosis, it can be determined only by clinical methods."

Without going into detail about the many controversial points discussed in Dr. Badham's paper, I enclose a recent letter from Professor Lyle Cummins to me on the subject of disability in these cases. Perhaps you would be good enough to publish this letter in your journal.

I am sure that in those cases where compensation for lung conditions is in question, the nervous element is a very marked one, as in practically all compensation cases. In these cases it is the rule for the man to be X rayed, and then told to cease work because his lungs are damaged. Then for some months or years he does no work or exercise; confers frequently with his fellows about the dire effects of his condition; understands that breathlessness is the symptom of the complaint; is treated by his wife, family and friends, and even his medical adviser in many cases, as a confirmed invalid with a lung complaint which causes mainly breathlessness. The obvious result is that the man is quite sure all these things are true, and that he is in an extremely bad way; often his pulse rate increases as a result of his nervous state, and naturally he becomes unfit to some extent. If at this stage he is tested, he will usually be found to have more breathlessness than the average, and often a nervous, quick pulse. It may be very difficult to decide how much the rapid pulse and breathlessness are due to: (i) compensation neurosis, (ii) semi-invalid life, (iii) age and its disabilities, (iv) a lung condition.

It is often extremely difficult to be certain whether the man is unfit on account of his lung condition or his nervous condition. Some help may be found in the knowledge that there are dozens of coal miners in New South Wales able to work as coal miners up to the ages of 65, 70 and over.

It is to be remembered that a man wrongly put off work at the age of forty may have to look forward to thirty years as a useless citizen, living on the community. Certainly some coal miners become short of breath in their later years; whether they are more disabled than other labourers at the same age is open to question in many cases.

Yours, etc.,

G. C. WILLCOCKS, M.B.

Macquarie Street,

Sydney,

May 5, 1933.

[Copy.]

Department of Tuberculosis,

Welsh National School of Medicine,

The Parade, Cardiff,

9th January, 1933.

Dear Sir,

In reply to your letter, I am sending you a copy of a paper which I gave at the Cardiff Institute of Engineers, and you will shortly see a paper by Dr. Sladden of Swansea, which was given at the British Medical Association meeting last July but has not yet appeared, dealing with pneumoconiosis in coal-miners.

There is a great risk of compensation being wrongly awarded in such cases. In no case should it be given to ordinary workers at the coal-face, unless they have had a very long exposure to stone-dust. Here in Wales, we find that, practically speaking, it is only those who have worked in hard-headings, or as borers or sinkers in hard stone, who are seriously injured, though many others show slight degrees of silico-anthraxosis which does not incapacitate them.

My own opinion is that a coal-miner who has a history of work in hard stone, and who has marked dyspnoea as well as radiological appearances characteristic of pneumoconiosis, ought to get the benefit of the doubt and receive compensation. In such a case, the industrial history and the total length of exposure ought to be important factors to be considered. I cannot believe that men of 33-34 years of age are likely to develop pneumoconiosis in the coal industry unless they have been employed as workers in hard stone for a considerable part of their working life.

In case of compensation to the families after death, the problem ought to be simpler. In such cases a post mortem is necessary and the lungs should be examined for the pathological and histological changes characteristic of silicosis, and portion of the lungs should be analysed chemically to ascertain the total amount of silica in the lung ash. You will see the sort of amounts that are associated with pulmonary disease in the paper by Dr. Sladden and myself, which I understand you have read. In such cases, the occurrence of nodular and diffuse fibrosis, associated with a high silica content in the lung ash, should go far to establish a claim for compensation. Nodular fibrosis alone, unaccompanied by a marked increase in the total silica found in the lung ash, should not, I think, be accepted as conclusive evidence of silicosis, as very similar histological appearances may arise from healed tubercles of small size. In such cases, an industrial history, including exposure to the dust of hard stone, the presence of nodular or diffuse fibrosis and the finding of a high silica content, form the three important factors in justifying the diagnosis of pneumoconiosis and the granting of compensation.

England is very far behind in the matter of legislation and our Statutes give rise to great confusion at the present time. I think that any Compensation

Scheme should take into account the points which I have ventured to mention in my letter.

Hoping these notes may be of some use,

Yours sincerely,

(Signed) S. Lyle Cummins.

Dr. George C. Willcocks,  
Harley, 143, Macquarie Street,  
Sydney.

## Obituary.

### ARTHUR WILLIAM DALY.

We regret to announce the death of Dr. Arthur William Daly, which occurred on May 12, 1933, at Melbourne, Victoria.

### THOMAS GLEN OLIPHANT.

We regret to announce the death of Dr. Thomas Glen Oliphant, which occurred on May 13, 1933, at Kew, Victoria.

## Congress Notes.

### AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

THE Executive Committee of the Fourth Session of the Australasian Medical Congress (British Medical Association) announces that Dr. D. H. E. Lines has been appointed President of the session.

Dr. H. N. Butler and Dr. W. L. Crowther have been appointed Joint Honorary Secretaries, and Dr. Stuart Gibson Honorary Treasurer.

The date of Congress has been fixed for January 15 to 20, 1934. The Chancellor of the University of Tasmania and the Director of Education have placed at the disposal of the Executive Committee the whole of the accommodation at the University of Tasmania and at the Philip Smith Teaching College. They have been of the utmost assistance in the completion of the arrangements so far made and have promised to make available to the Executive the whole of their equipment. There will be ample space for the housing of a large trade exhibition.

### Sections of Congress.

The sections of Congress will number ten. Their designations, with their secretaries, are as follow:

Section I: Section of Medicine (Dr. R. Whishaw, Hobart, and Dr. Clemons, Junior, Launceston).

Section II: Section of Naval, Military and Air Medicine and Surgery (Dr. R. M. W. Webster, Campbell Town).

Section III: Section of Obstetrics and Gynaecology (Dr. E. Brettingham Moore, Hobart).

Section IV: Section of Ophthalmology (Dr. Bruce Hamilton, Hobart).

Section V: Section of Oto-Rhino-Laryngology (Dr. B. Hiller, Hobart).

Section VI: Section of Public Health, Preventive Medicine and Tropical Hygiene (Dr. C. N. Atkins, Hobart).

Section VII: Section of Radiology and Electrical Therapy (Dr. W. P. Holman, Launceston).

Section VIII: Section of Pædiatrics (Dr. A. W. Shugg, Hobart).

Section IX: Section of Pathology, Bacteriology and Cancer Research (Dr. J. H. B. Walsh, Hobart, and Dr. Grove, Launceston).

Section X: Section of Surgery (Dr. C. Craig, Launceston, and Dr. T. Giblin, Hobart).

**Auxiliary Committees.**

A Finance Committee has been organized. Dr. W. Giblin, of Hobart, is Chairman, and the Treasurer and Joint Honorary Secretaries are members of the Committee.

Transport, Accommodation and Excursions Committee: Dr. A. W. Shugg is Chairman and Dr. E. A. Rogers is Secretary. Mr. Emmett, the Director of the Tasmanian Government Tourist Bureau, has been co-opted as a member.

Entertainments Committee: Dr. F. Fay is Chairman, and Dr. Bruce Hamilton, Secretary. Dr. Terence Butler is a member of the Committee and has been entrusted with the organization of the sports and angling.

Trades Exhibits Committee: Dr. T. H. Goddard is Chairman, and Dr. J. S. Reid, Secretary.

**Congress Subscription.**

The Congress subscription has been fixed at three guineas. Medical practitioners who wish to become members of Congress, but who are unable to attend, will be asked to pay a fee of two guineas; they will receive a copy of the transactions. The Executive wishes it to be widely known that medical practitioners should, on account of the difficulty of obtaining accommodation and transport, apply at once for membership. A further announcement in this regard will be made in next week's issue.

**Diary for the Month.**

- JUNE 1.—South Australian Branch, B.M.A.: Council.  
 JUNE 2.—Queensland Branch, B.M.A.: Bancroft Memorial Lecture.  
 JUNE 7.—Victorian Branch, B.M.A.: Branch.  
 JUNE 7.—Western Australian Branch, B.M.A.: Council.  
 JUNE 9.—Queensland Branch, B.M.A.: Council.  
 JUNE 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.  
 JUNE 20.—New South Wales Branch, B.M.A.: Ethics Committee.  
 JUNE 21.—Western Australian Branch, B.M.A.: Branch.  
 JUNE 22.—New South Wales Branch, B.M.A.: Clinical Meeting.

**Medical Appointments.**

Dr. J. A. H. Sherwin (B.M.A.) has been appointed a Member of the Medical Board of Victoria, pursuant to the provisions of Section 3 of the *Medical Act*, 1928.

Dr. C. F. Pitcher (B.M.A.) has been appointed a Member of the Advisory Committee of the Marseba Babies' Hospital, South Australia.

**Medical Appointments Vacant, etc.**

For announcements of medical appointments vacant, assistants, locum tenentes sought etc., see "Advertiser", pages xvi, xvii

AUSTIN HOSPITAL FOR CANCER AND CHRONIC DISEASES, HEIDELBERG, VICTORIA: Resident Medical Officer.

CHILDREN'S HOSPITAL (INCORPORATED), PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officers (male).

LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA: Resident Medical Officer (male).

MANLY DISTRICT HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Consultant Radiographer.

MARRICKVILLE DISTRICT HOSPITAL, SYDNEY, NEW SOUTH WALES: Resident Medical Officer.

MATER MISERICORDIE CHILDREN'S HOSPITAL, BRISBANE, QUEENSLAND: Resident Medical Officer.

PARRAMATTA DISTRICT HOSPITAL, PARRAMATTA, NEW SOUTH WALES: Junior Resident Medical Officer (male).

THE BRISBANE AND SOUTH COAST HOSPITALS BOARD, BRISBANE, QUEENSLAND: Casualty Surgeon, Honorary Officers.

THE UNIVERSITY OF MELBOURNE, VICTORIA: Honorary Demonstrator in Radiological Anatomy.

WALLSEND MINING DISTRICT HOSPITAL, WALLSEND, NEW SOUTH WALES: Resident Medical Officer.

**Medical Appointments: Important Notice.**

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing. Lower Burdekin District Hospital, Ayr.
SOUTH AUSTRALIAN: Secretary, 297, North Terrace, Adelaide.	Combined Friendly Societies, Clarendon and Kangarilla districts. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

**Editorial Notices.**

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor", THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Searns Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £1 for Australia and £2 5s. abroad per annum payable in advance.